

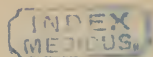


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HAND-BOOK



OF

PRACTICAL MIDWIFERY,

INCLUDING FULL INSTRUCTION FOR THE

HOMŒOPATHIC TREATMENT

OF THE

DISORDERS OF PREGNANCY,

AND THE

ACCIDENTS AND DISEASES INCIDENT TO LABOR AND THE
PUERPERAL STATE.

BY

J. H. MARSDEN, A.M., M.D.

Homo sum ; humani nihil a me alienum puto.



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P R E F A C E.

THE design of this work is to furnish the student and young practitioner, within as narrow limits as possible, all necessary instruction in practical midwifery. The object of this benign art is, or at least should be, to save life, maternal and infantile, and to reduce suffering to its lowest possible minimum. Any method which will best accomplish these purposes, is the best method, no matter by whom devised.

In order to secure sufficient space fully to discuss all subjects of practical importance, and yet restrict the size of the book within very moderate bounds, the author has omitted some preliminary topics usually embraced in a treatise on midwifery. He has taken for granted that the student has already become familiar with anatomy and physiology, through the study of works specially upon these subjects, including a minute description of the reproductive organs, and the theories of conception, embryonic development and foetal growth. Having no peculiar views of his own upon these subjects, he thinks it as well to send his pupils for instruction to those who have made them a special study. Here they may learn at least the theories of to-day; but it is more than doubtful, whether we shall ever be able fully to analyze the operations of creative power. By this disposal a large amount of space is economized, and the student is not subjected to the unnecessary expense of purchasing what he may be presumed already to possess in other books. The truth is, practical midwifery is in a great measure, if not wholly, independent of any theory of conception or embryology.

It is not claimed that the following work is abso-

lutely original. To make it so, it would have been necessary to reject the fruits gathered by all the laborers of past ages in this important field, and who, it may be asked, would be willing to incur such a fearful responsibility, or who possessed of such unbounded self-conceit, as to suppose himself competent after casting all these away, to supply their place from his own independent resources. At the same time it is hoped the book may be found to contain as large a proportion of original matter as is usually met with in treatises upon the same subject. But whether this adds to the excellence or detracts from the value of the work, the author does not consider himself the proper umpire to decide. The reader must judge for himself. Let all that claims originality go for what it is worth—nothing more is asked.

The portions of the book taken from the general stores of knowledge upon the subject, which have been long accumulating, are such as the author has found from his personal experience to be really valuable, or such as approved themselves to his common sense.

Quotations are for the most part credited to their authors. When we draw, however, upon our common stock of knowledge, it is often impossible to determine what is originally our own, or what we have gotten by the way from some other source. It is, too, a remarkable fact, that the same fortunate thought often occurs to men about the same time who are distant from, and entirely independent of each other. Important truths are revealed to the world in the fulness of time, when mankind is more or less prepared for their reception; but their introduction and promulgation are seldom entrusted to a single individual, however gifted he may be.

In using the results of other men's labors, the author cherishes the belief, that he has wished to render to every man his due, and if to the reader any thing appear seemingly at variance with such avowal, it is hoped he will charitably attribute it to oversight, rather than to dishonorable intention.

In regard to the therapeutics of the work, the author would simply remark that he has not adopted the method seemingly pursued by some, of writing out the pathogenesis of a drug as given in the books—for instance Belladonna—and then sagely adding, "if these symptoms occur give Belladonna." On the contrary, he has stated the treatment which in his past experience he has generally found successful in the particular case in question; then reference is probably made to remedies recommended upon what he esteems good authority, and this is perhaps followed by a list considered worthy of examination and comparison with existing symptoms. It is thought best that the young practitioner should, in a careful and unbiassed manner, examine the symptoms of the case before him as they actually exist, and having got a correct and precise view of these, then consult, if necessary, his *materia medica*, and fit the drug to the symptoms, not the symptoms to the drug.

Perhaps some in turning over the pages of this book will be disappointed and surprised at the absence of all pictorial illustrations. The author is aware of the importance attached by many to this method of teaching midwifery. He begs leave to say, however, that having himself had long experience as an instructor in schools and colleges, he feels that he has a right to claim an independent opinion in matters pertaining to the art of teaching. It is his confirmed belief that in

teaching midwifery, the wood-cuts and plates given as illustrations, rather tend to create erroneous views than to furnish an elucidation of the subject. The student, therefore, when he comes to the bed-side is not unfrequently under the necessity of unlearning what he has erroneously learned from books. An exact knowledge of anatomy, aided by an imagination of ordinary power, will enable him correctly to comprehend all that can be fully comprehended, until he has an opportunity of confirming or correcting his views at the bedside of the parturient woman.

In treating of the mechanism of labor the author has enunciated and endeavored to illustrate what seemed to him the *fundamental* law governing the process of parturition. Content with doing this, he has left to those fond of such investigation, to determine the special modifications of force and resistance concerned in effecting individual results.

Finally, the kind indulgence of the reader is humbly solicited, not upon the ground that pressing business and cares had prevented due attention to the preparations of this work; for if there had been such insurmountable hindrance to its proper execution, it ought never to have been undertaken; but rather upon the ground that all human performances are necessarily imperfect, through the very imperfection of human nature itself. Such is the author's estimate of the importance of his subject, that after having for many years done all within his power in its behalf, he feels bound to subscribe himself an "unprofitable servant."

THE AUTHOR.

YORK SULPHUR SPRINGS, PA.

January, 1879.

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PRACTICAL MIDWIFERY.

CHAPTER I.

DIAGNOSIS OF PREGNANCY.

As one of the first duties which the obstetrician is likely to be called upon to perform, is the treatment of the disorders incident to pregnancy, it is highly important he should be able to diagnose that condition with the greatest possible certainty. We say with the greatest *possible* certainty, for we believe it is admitted upon all hands, that in the early stages at least, absolute certainty in all cases is unattainable. Much research has been expended in the effort to discover some one infallible sign or symptom which, whensoever found to exist, might decide the question beyond a doubt. As yet, however, the attempt has been unsuccessful. It is rather through a concurrence of symptoms, than through any single one, that we are enabled to arrive at a considerable degree of certainty. I speak here of the early stage, for as pregnancy advances, it becomes more and more manifest, until it leaves us room for scarcely a doubt of its existence.

One of the first and perhaps most constant signs of pregnancy, is the cessation of the catamenial flow. Where this function has been heretofore regularly performed and suddenly ceases, is absent at the time of its expected recurrence, without any other assignable cause, it may be strongly suspected

in the case of married women, and of those of whose chastity we may entertain doubts that conception has taken place. Generally the menses fail to appear at the period next after a fruitful copulation. But this is not always the case. Sometimes the evacuation will recur, scarcely modified, for one or two periods after the beginning of pregnancy. Cases too are not wanting wherein the catamenial function (or something resembling it) has been performed without interruption, throughout the entire term of gestation. This however is very rare.

But there are, we must bear in mind, other causes besides conception which occasionally interrupt the regular recurrence of the catamenia. Exposure, for instance, to wet or cold during the flow, especially if the woman at the time be in a warm or perspiring condition, is very apt to interrupt it suddenly and prevent its return at one or more subsequent periods. So well are females acquainted with this, that young girls wishing to conceal their illicit pregnancy, will often account to the physician for the absence of their monthly periods, by asserting that they had taken cold, had got wet feet, etc. Diseases too, which greatly debilitate the system, diminish the quantity and impoverish the quality of the blood, lead eventually to a partial or total suppression of the menses. Such are chlorosis, phthisis pulmonalis and the different forms of anemia.

There are certain cases too, in which we cannot avail ourselves of this sign of pregnancy, valuable as it may be. For instance it sometimes happens that women who have already borne children, again become pregnant before the reappearance of the external sign of ovulation. Others conceive, it is said, who have never menstruated at all. I once attended a woman in confinement whose word I had no reason to question, who told me she had but once menstruated in her life, and that was shortly before her marriage, although she was at the time to which I refer, the mother of several children. Perfect relates the case of a young woman who presented all the signs of pregnancy, who had before that period never menstruated at all, but her courses then appeared and continued at the regular

epochs throughout gestation. (*Cases of Midwifery*, Vol. ii., p. 71) Deventer, Baudelocque and Chambon, furnish cases of women who were "regular" only during gestation. In some of these very rare cases the appearance of the catamenia was regarded as satisfactory evidence that conception had taken place. Such instances as the above are however so rare as not to detract very materially from the value of menstrual suppression as a sign of pregnancy.

The so-called "morning sickness" is another important sign often occurring at an early stage of gestation. It is not however a uniform attendant upon that condition. Some patients entirely escape it, even some who have been much harassed by it during one pregnancy, do not experience it in a subsequent one. Dr. Clay, of Manchester, asserts that it sometimes occurs in the early stage of ovarian tumors. The nausea of pregnancy is peculiar and easily distinguishable from that arising from ordinary causes. It usually manifests itself when the patient first rises in the morning, increases in severity till it results in efforts to throw up, sometimes very severe and distressing. As the stomach is then generally empty, nothing is ejected but the secretions of that organ and of the upper portion of the alimentary tract, occasionally mixed with bile. The distressing sickness has been compared to that occasioned by tobacco smoke in the first attempts to use segars. Morning sickness is very variable both in the length of its daily paroxysms, and in its persistence in the course of gestation. In some cases it lasts but a few minutes after its onset, in others it continues through the most part or even the whole of the day, while some enjoy no exemption from it except during their sleeping hours, and even then are occasionally awaked by excessive nausea. In most instances it entirely ceases to recur at or a little before the middle of gestation, while some patients continue to be harassed up to its very close.

Cotemporaneous with the vomiting of pregnancy may often be observed a peculiar aspect of the countenance, which, when present, I have thought of much value in our diagnosis. Perhaps it occurs more frequently in young women of fair complexion and nervous temperament. There is an unusual trans-

parency of the skin, the eyes appear hollow, and are surrounded with a dark or livid circle. The features are sharp and attenuated, and the face and indeed the whole frame seems somewhat emaciated. The general expression of the countenance is sad and languishing. These appearances are probably produced by the womb monopolizing the process of nutrition to build it up and fit it for the requirements of the growing fœtus.

Among the earlier signs of pregnancy may be mentioned, although of rather rare occurrence, profuse salivation. "I have known cases of this kind" says Dr. Meadows, "where the quantity of fluid which poured from the mouth might be measured almost by pints in the twenty-four hours." No indications of inflammation of the mouth or gums appear upon examination in such cases. It is, as Dr. Montgomery remarks, "easily distinguished from the ptyalism induced by mercury, by the absence of sponginess and soreness of the gums, and of the peculiar fetor." Of course other signs of pregnancy being present, and the history of the case when accessible, will assist us in this differential diagnosis.

Among the first signs, some authors enumerate "slight flatness of the hypogastric region" and depression of the umbilical cicatrix. Also certain changes in the uterus and vagina. The os and cervix become soft and spongy, the transverse, lip-like fissure is changed into a more circular form, and the temperature of the vagina is somewhat higher than normal.

Toward the close of the second month after conception, certain sensations are experienced in the mammary glands and nipples, attracting the attention of the woman. She has a feeling of fullness and throbbing in the substance of the former, they increase in size, and have a peculiar knotty glandular feel. The areola surrounding the nipples enlarges in its diameter and assumes a darker hue, the difference being greater in women of dark complexion. In the virgin state it should be observed that the color of the nipple and areola differs but little from that of the surrounding skin, being of a light pink-like tint. Dr. Clay also maintains that the areola of the nipple enlarges and becomes darker in cases of ovarian tumor.

Connected with enlargement of the breasts, especially in young women where the change is rapid, little smooth bright lines are observed in the skin, resembling such as are found upon the abdomen after considerable distension in that region has taken place.

The tissue around the nipple becomes elevated, soft and puffy, and this is considered by Dr. Montgomery as among the most valuable signs of existing pregnancy. It is said that Mr. John Hunter, in the case of a young girl, the subject of a post-mortem examination, asserted positively from this sign alone that a fœtus was contained in the womb, which was found to be the case, although the hymen was said to be still entire. The follicular glands or sebaceous follicles, fifteen or twenty in number around the nipple, become much developed and elevated, so as to be very conspicuous. These changes in the nipples and areola are certainly very strong evidence of pregnancy, and I believe are generally so considered. Instances are on record however, at least in regard to most of them, that they have been known to be produced by other causes and therefore, singly, cannot be regarded as positive proof of existing utero-gestation.

As pregnancy advances, other signs manifest themselves in the condition of the womb, size and shape of the abdomen, etc. Even at an early stage of gestation and before the woman experiences any unusual sensations indicative of her condition, if an examination be made "per vaginam," the womb will be felt somewhat increased in size and weight. The whole of the lower part of the body gradually enlarges, and towards the close of the third or beginning of the fourth month, a hard rounded tumor will be found rising slightly above the os pubis in front. This is the fundus of the womb which gradually increases in size, and rises higher and higher until that organ at full term seems to occupy the whole abdominal cavity. This gradual enlargement of the womb is a very valuable sign. It is however sometimes simulated by the existence of uterine growths, ovarian cysts and solid tumors, ascites, etc. Diagnostic distinctions between these and pregnancy is not always easy. Uterine tumors are usually associated with a bad condi-

tion of the health, often with severe floodings. Those of the ovary in like manner, are generally accompanied by bad health and emaciation. The enlargement moreover in the case of the latter if noticed in the beginning, is usually found low in the hypogastric region and to one side of the median line, corresponding with the site of the right or left ovary. Ovarian cysts however, sometimes do not attract the attention of the patient till they occupy a central position, and then she usually insists that they have been there from the beginning. Ascites is not only associated with a sallow, sickly complexion and actual bad health, but generally dropsical effusions will be found in the feet and lower extremities. Fluctuation in the abdomen more or less distinct, can also mostly be detected. In the case of pregnancy on the contrary, by the time the uterine tumor becomes noticeable, the woman usually enjoys excellent health. The morning sickness, if it had theretofore been troublesome, has mostly by this time passed away. The pale emaciated appearance which may have signaled the early stage, gives place to what the French call "*en bon point*," the aspect of robust, rugged health. The history of these different conditions will also furnish much aid in forming a correct diagnosis. Upon this, however, I need not dilate, the reflecting student will easily conceive how different this would be in the several conditions just referred to. It is of vast importance however, to distinguish the diseased conditions of which we have spoken from pregnancy. Errors have led to the most serious results, as for instance, the tapping of the pregnant woman under the delusion that she was suffering from dropsy, to her great hazard and sometimes even with fatal consequences to herself and unborn offspring.

Dr. Braxton Hicks has recently called the attention of the profession to a diagnostic sign of pregnancy, not before specially noticed in that point of view. He maintains, that as soon as the womb is large enough to be felt, if the hand be applied over it, without any friction or pressure, that organ will be felt to harden or contract every five or ten minutes, sometimes oftener, rarely at longer intervals. Dr. Tyler Smith had noticed this phenomenon, but ascribed it to peristaltic action,

and perhaps failed to appreciate its availability as a symptom of utero-gestation, and a means of enabling us to distinguish that condition from uterine enlargements from tumors or other causes. If Dr. Hicks be correct as to the constancy of these contractions, and their persistence throughout the whole course of pregnancy, from their first occurrence, they should certainly be regarded as of great value in diagnosis.

Dr. Playfair tells us that since reading Dr. Hicks' paper, he has "paid considerable attention to this sign," which he has never failed to detect, even in the retro-flexed gravid uterus contained entirely in the pelvic cavity. "If the hand" says he, "be kept steadily on the uterus, its alternate hardening and relaxation can be appreciated with the greatest ease. The advantage which this sign has over the foetal movements, is that it is constant, that it is not liable to be simulated by anything else, and that it is independent of the life of the child, being equally appreciable when the uterus contains a degenerated ovum or dead foetus." (*Playfair's Midwifery*, pp. 134-35.

A very important sign of pregnancy is derived from the operation called "*passive movement*," or, as the French term it, *ballotement*. A very good idea of this may be obtained by supposing a solid substance enclosed in a bladder filled with water, and of such specific gravity as to sink to the bottom, but this not much exceeding that of the fluid in which it is immersed. Let the bladder be held up with one hand and with a finger of the other let a quick impulse be given to the solid body in an upward direction. The sensation will be conveyed to the finger of something departing from it, and in a moment falling back upon it again. Now the pregnant womb corresponds to the apparatus we have supposed. It contains a sac called the amnion; this sac is filled with a fluid called the waters or amniotic fluid. Within this the foetus floats freely, representing the solid body we have just supposed. Now if a sudden impulse be given to this body by the finger through the walls of the womb in an upward direction, the same sensation will be experienced of something departing and then falling back again.

The operation is performed in the following manner: the

woman standing erect upon her feet as the preferable position, the index finger of the left hand is introduced into the vagina and carried up till it impinges upon the womb, either before or behind the cervix; better *behind* if the finger of the left hand be employed. In either case, there is only the thin wall of the womb between the point of the finger and the ovum, whereas, if the finger impinged upon the cervix, the thickness of the intervening tissues would be considerably greater. The palmar aspect of the finger being thus applied to the womb, a sudden stroke is given to the latter, from below upward and from behind forward, and then the finger maintained in its position. It is important that the direction of the force should be somewhat forward and not directly upward, for the axis of the womb generally corresponds to that of the upper strait, and if the fœtus be impelled in this direction it will have a much freer movement, and consequently the impulse of its return will be much more plainly perceptible than if impelled directly upward, in which direction its movement would be very limited. At the moment the impulse is given, a sensation of something departing is perceived, and if the finger be retained *in situ*, it will perceive the mobile body falling back upon it. The operation may be performed while the woman is in the recumbent posture, but not so advantageously, as we have not then so much the aid of gravitation.

This sign is generally considered available about the fifth month. Before that period the fœtus is mostly too small, and perhaps the uterine walls too thick, to admit of the operation being successfully performed. When available, it affords the strongest evidence of pregnancy, as no other known condition gives rise to the same phenomenon. But failure in a single trial is not to be regarded as positive evidence of the non-existence of pregnancy. Our search is not always successful in the fifth month, the small size of the child enabling it easily to change position, so that one day it may be found and perhaps the next elude the most diligent search.

Avicenna, who was born in the year 980, studied and described the peculiar characteristics of the urine of pregnant women. More recently and after the observations of the author

just named had passed out of notice, the subject awakened a new interest and was studied with greater precision by Nauche, Eguisier and Tanchon in France, Letheby and Stark in England, and in the United States by Dr. Elisha K. Kane of Philadelphia.

The experiments of these gentlemen demonstrate, that if the urine of a pregnant woman be left to stand in a wine glass exposed to the atmosphere, in a few hours a deposit of cloudy flakes settles upon the sides of the glass, the urine in consequence becoming more limpid. In the course of two or three days, the urine again becomes more intensely clouded, and soon after a pellicle forms upon the surface. About the third or fourth day after its formation portions separate, and are precipitated so that by the fifth or sixth day it has mostly disappeared. This pellicle has been denominated *Kyesteine*, from the Greek word *kuesis* gestation. It is said to be seldom noticed before the second month of utero-gestation and to be most noticeable between the third and seventh month. It has been thought by some to be peculiar to pregnancy, and therefore when seen, conclusive proof of its existence. This, however, has been disputed by others, who insist that a similar, if not an identical state of the urine is sometimes found in that of persons laboring under certain diseases, such as phthisis, articular diseases, etc. Dr. Kane, whose observations have been perhaps the most extensive as well as precise, has also noticed this appearance in the urine of women giving suck. "In forty-four out of ninety-four cases of suckling women, he observed *Kyesteine* presenting all its characteristics." But the proportion of pregnant women manifesting this peculiarity of the urine was still much greater, namely four out of five.

It would appear therefore that when *Kyesteine* is found in the urine of a woman in good health and not giving suck, it is strong presumptive evidence that she is pregnant. Taken in connection with other coexisting symptoms tending to establish the same point, it may assist us much in forming a correct diagnosis.

As utero-gestation advances, other signs are developed, while some of those already enumerated are intensified. The ab-

dominal tumor from month to month increases in size, and the fundus of the womb ascends higher and higher, giving rise finally to difficulty of respiration and sometimes interfering with the process of digestion. About the middle of the fifth month, sooner or later, according to circumstances, the movements of the fœtus are felt by the mother. This generally in the minds of women themselves is considered as indubitable proof of their pregnancy, and yet even in this they have sometimes been mistaken. Other internal movements or delusive sensations have been taken for the motions of a child, when the sequel showed that none could have been present. When the woman first perceives the "quickening," as it is called, she considers her term half expired and she mostly reckons the time of her expected confinement from that period. This reckoning, however, often proves fallacious. Many circumstances conspire to make the time of quickening different in different cases. Something for instance will depend upon the vigor of the child, and something upon the acute sensibilities of the mother. But however deceptive the first sensations the woman may experience, which she refers to the motions of a child within her womb, she can scarcely be mistaken in the latter months of utero-gestation. These movements become so strong as to be in some cases actually painful and give rise to a peculiar feeling of sickness. This symptom of pregnancy, when *fully developed*, can scarcely lead to a mistake, as there is no known cause capable of producing it in its intensity, except a living child.

The sounds of the fœtal heart may now under favorable circumstances be heard by the aid of the stethoscope. To succeed in this, the woman should lie upon a bed of sufficient height, so as not to require the operator to stoop too much; otherwise the congestion of the head caused by stooping, will seriously interfere with accurate hearing. The instrument should be placed at once in front, below, and a little to the left side; for here the pulsations are most commonly heard. If we do not thus attain our object, it is well to inquire of the woman where she usually feels the fœtal movements. If she can inform us of this, we may expect to detect the pulsations upon

the opposite side; for the child's members which execute the movements are folded upon the front of its body, and the sensations of the woman therefore determine to which side of her abdomen the front of the child, for the time being at least, is turned. The back of the fœtus through which the sounds of the heart are most readily heard, is of course turned in the opposite direction, designating the region to which the stethoscope is to be applied. We need scarcely say that the sounds of the fœtal heart afford important evidence of pregnancy, as there is nothing else for which they can be mistaken. The quickness of the pulsations will distinguish them from those of any of the maternal arteries, if such could be heard.

We have thus given some of the most obvious and reliable symptoms of pregnancy. If we meet with a coincidence of all or even several of the more important of these, we can entertain no reasonable doubt of the nature of the case before us. It must be remembered, however, that unmarried females who are anxious to conceal their condition, generally misrepresent; in short we can place no reliance whatever upon their statements. In examining such, we should depend principally upon symptoms which they cannot misrepresent or conceal, or over which they have no control. For instance, if they even admit that the catamenia is suppressed, they account for it by stating that they had got their feet wet or taken cold, and perhaps can give even the day and peculiar circumstances when the accident happened. In the very large proportion of cases where there is cessation of the monthly periods of young girls, without any corresponding derangement of health, there is illicit pregnancy, although the denouement may never declare it before the world. In such cases, however, we are not to be rash in our conclusions. We may do great injustice to a worthy young woman by even thinking her guilty of unchastity, although we should communicate our suspicion to no one else. The female character once sullied, seldom wholly regains its pristine lustre. Besides there are exceptional cases, such as those of young girls at school who often are deprived of proper exercise while their minds are wholly devoted to their tasks. But if this state of things be long continued, it

seldom fails to engender ill health, which in its turn tends to prolong the amenorrhœa.

As it was not our intention in this place to delineate the whole course of utero-gestation through its various stages, from its beginning to its end, but simply to furnish the means of its diagnosis, it is unnecessary we should go on to speak of the various phenomena developed as it approaches its close. Some of these will more properly engage our attention under other divisions of this work.

CHAPTER II.

DISORDERS OF PREGNANCY.

It is the duty of the physician, so far as in his power, to relieve the sufferings of the pregnant woman as they arise during the course of utero-gestation. It is not sufficient to exhort her to patience with the assurance that by and by all will again be right. Her sufferings, though strictly speaking they may not be those of disease, are yet real, and none the less demand relief. It is a satisfaction to know that homœopathy has resources in controlling the disorders of pregnancy, much more efficient than those possessed by the old school of medicine, while they are at the same time, when properly used, wholly innocuous, and therefore much better suited to the delicate condition of the patient.

MENSTRUAL SUPPRESSION.—The physician is not often consulted on account of the menstrual suppression, which takes place in the great majority of cases immediately after conception. With married women this is usually referred to the true cause. But often unmarried girls, who have become pregnant by illicit intercourse, apply to the physician for relief from this abnormal state, partly for the sake of concealing

for the time their real condition, and it is to be feared sometimes with the hope that the medicine given may produce abortion. The homœopathic physician, even though he should form an incorrect diagnosis, is not likely to be so unfortunate in his treatment as to unintentionally bring about this result. But it is highly important, even to him, to be upon his guard, and where any of the usual concomitant signs of pregnancy can be detected, to abstain from medication altogether. Where amenorrhœa is the consequence of pregnancy, all medical treatment must be unavailing and worse than useless. It is a natural consequence of utero-gestation which will find relief soon after the termination of that condition, and not till then. The surplus blood, which in the non-pregnant state was wont to pass off by regular monthly evacuations, is now employed for a specific object, namely, for the increase in size of the uterus necessary to prepare it for its new function, and the growth of the fœtus contained within its cavity. According to a recent theory of menstruation, the periodical change in the interior surface of the womb, fitting it to become the receptacle of the impregnated ovum, usually accompanied by effusion of blood, and termed nidification, no longer takes place, because no longer required. The distension in this organ caused by the rapid afflux of blood thereto, is sometimes accompanied by feelings of considerable discomfort to the patient, such as a sensation of weight in the uterine region, tension, frequent desire to urinate, weakness of the limbs, anxiety, palpitation of the heart, accompanied sometimes by change of temper, depression of spirits, etc. *Nux vom.* may prove a useful remedy for these symptoms. *Puls.*, if the woman be of a lymphatic temperament, pale complexion and of a gentle timid character. *Bellad.*, where there are signs of congestion to the head. *Act. rac.* and *Digit.*, where palpitations of the heart are troublesome; for the latter symptom perhaps also *Arsenite of Copper*, 4th decimal.

MORNING SICKNESS, or the vomiting of pregnancy, although very common and often causing great discomfort, is in many cases borne by the patient as an unavoidable and irremediable suffering pertaining to her condition. This in part arises from

the very partial success usually attendant upon the ordinary treatment of this affection. Sometimes, however, this ailment becomes so distressing, and even threatening, that the sufferer anxiously seeks relief. The practitioner should, therefore, be prepared to treat such cases successfully, as may usually be done by means of homœopathic remedies. *Nux vom.* will often be found to correspond with the symptoms of these cases and consequently prove curative. When the nausea and vomiting are not confined to the first hours after rising, but are rather continual, the food taken into the stomach is ejected, bile or mucus mixed with bile is thrown up by repeated retchings, *Ipecac.* is indicated. *Sepia* is supposed to be suited to the vomiting of milky mucus. Dr. Cowley tells me he finds it in the 1st dec. trit. a very efficient remedy. *Arsen.* corresponds to those cases where vomiting occurs immediately after eating or drinking, and which are attended by great prostration. *Puls.* where vomiting comes on in the night accompanied by depraved appetite, desire for acid substances, beer, wine, etc.; diarrhœa alternating with constipation. *Kreosote* is another useful remedy, the characteristic symptoms for which my experience does not enable me to give, but perhaps some guide may be found for its successful application in its symptomatology. The late Prof. C. D. Meigs spoke highly of minute doses of Sulphate of Soda, and Dr. Simpson claims to have used successfully the Oxalate of Cerium. I remember a case of uncommon severity which occurred in my practice, for the relief of which I used *Nux vom.*, *Ipecac.*, Oxalate of Cerium, and perhaps some other remedies, with very partial, if any success. I afterwards gave Arsenite of Copper, 3d dec., with almost immediate benefit and very shortly complete relief. This case was characterized by constant and severe nausea, the rejection of all food and drink almost immediately after it was swallowed, great emaciation and prostration of strength, the patient was obliged constantly to maintain the recumbent posture, great depression of spirits, disinclination to all motion or effort, quick and feeble pulse, occasional pain of a spasmodic character in the region of the womb, and at one time after some little indiscretion in diet,

frequent and painful dysenteric discharges from the bowels, with tenesmus, although about midwinter. Amelioration followed the employment of the Arsenite by the second day, and the amendment was almost uninterrupted till complete recovery had taken place. The patient passed the remaining months of utero-gestation in comparative comfort, had a normal labor at full term, giving birth to a well developed female child of good size, and she made an excellent recovery.

The persistent vomiting of pregnancy, termed by Cazeaux "irrepressible vomiting," is perhaps sometimes dependent upon a neurosis or extreme irritability of the sympathetic system of nerves, and if this surmise be correct, I would entertain high hopes of the frequent utility of the Arsenite of Copper for its removal. When vomiting is accompanied by indigestion, the undigested food being ejected, Pepsin may relieve. The lining membrane of the gizzard of the common fowl, dried and trituated, has been highly praised. *Actea racemosa* has been favorably spoken of by some as a remedy for this distressing affection. I have tried this medicine in a few cases, but so far as I can remember, not with flattering results. From its admitted influence however, over the womb, it is worthy of a careful study in this relation.

When the vomiting is accompanied by salivation, or by the so-called "bilious symptoms," such as coated tongue, constipation, etc., *Merc. sol.* should be tried. Also *Podophyllin* and perhaps *Leptandrin* may be worthy of notice.

Dr. Grailey Hewitt has lately advanced the theory that the vomiting of pregnancy is not unfrequently caused by antversion or retroversion of the womb, or even by flexions of that organ. He defends this theory with much good sense and cogency of argument. While there is probably at this time an undue tendency to refer serious derangements of health to trivial deviations from the normal position of the womb, it is not improbable that any deviation from its natural position, sufficient to produce irritation in that organ may cause, or at least increase morning sickness. In cases therefore which obstinately resist medical treatment, it is proper we should make a careful examination, and correct any displacements we may

find existing. Although not partial to the use of pessaries, especially in cases of the impregnated uterus, we think it would be well after the womb is straitened or reposed, to apply one to retain it in its normal condition. We are too little addicted to the use of the instrument to be very authoritative in giving advice as to the proper selection. That called the "inflated ring pessary" is reported as having been successfully used, and Dr. Hale, an excellent authority, recommends Thomas's, Hewitt's, and Jackson's.

It is probable, as we may assume that the vomiting of pregnancy arises generally, if not always, from an irritation of the womb in the extremely susceptible condition in which it is then found, that the efficacy of the pessary mainly depends upon the counter-irritation which is set up by its presence. The reflex action previously expended upon the stomach, may be, as it were, recalled and turned upon the points of contact of the pessary.

That the irritation of the womb giving rise to vomiting is not, at least always, caused by versions and flexions of that organ, seems to be sustained by the fact, that vomiting usually ceases when abortion, spontaneous or artificial, takes place, unless we must assume, that upon that occurrence the womb at once regains its normal condition. This circumstance, we think points to the contained ovum as the "*Fons et origo*" of the evil. It may be that flexions, in the early stage of pregnancy, are more common than we have supposed.

When all measures fail to arrest the vomiting, and the patient is manifestly in danger of losing her life from its persistence, we are usually advised to produce abortion as a last resort—a measure, however, which I am happy to say I have never been obliged to adopt.

CHOREA.—This affection is supposed to occur most frequently in first pregnancies, and in young women of delicate health and irritable nervous system. It probably happens most generally in the early stages of gestation, before the womb has, so to speak, become reconciled to the new process going on within it. The same remedies are applicable here, that are useful in the disease occurring in the non-pregnant woman. In this

case, however, the uterus may be regarded as the seat of the malady—the centre whence the irritation emanates. Hence we will probably find *Actea racemosa* our best remedy. I have at least found it very efficacious. The first decimal dilution given at such intervals as the urgency of the case may seem to demand, will doubtless in many instances procure relief. Valerianate of Zinc and Sulphate of Zinc are also very worthy of consideration.

CONSTIPATION, arises partly from the sedentary habits of many women during pregnancy, but oftener perhaps from pressure, caused by the increasing size of the uterus, interfering with the peristaltic action of the bowels, and a diversion of nervous influence from the latter to the womb. This derangement may be greatly alleviated by suitable hygienic measures. Gentle exercise in the open air, admixture of fruit largely with the food of the patient, the use of bran bread, etc., will be found serviceable.

The patient should procure a good gum-elastic syringe and be instructed in the use of it. When the bowels cannot be evacuated without much straining, which by the way might produce hæmorrhage and abortion, she should administer to herself an injection of tepid water, and if ineffectual at first, repeat it in the course of an hour till a free evacuation is procured. If an enema of simple warm water do not answer the purpose, a little castile soap may be added. It has been recommended to drink a glass of pure, fresh water on rising each morning, which may prove useful. The utmost regularity should be observed in attending to the calls of nature, and in visiting the water closet at a stated time even though no urgency requires her to go.

The remedies most likely to be useful, if the foregoing measures do not succeed, are *Nux vom.*, taken at bed time, Sulphur, if *Nux vom.* fail to give relief, taken also in the evening, or *Nux vom.* may be taken at night and Sulphur in the morning, by way of alternation. *Bryonia*, in obstinate cases taken more frequently, say a dose every two hours through the day, will sometimes prove efficacious. Temporary relief may be pro-

cured by taking a few grains of inspissated ox gall, especially when the patient is troubled with flatulency.

DIARRHŒA is not an unfrequent attendant upon pregnancy. It may occur at any time in its course, and when conjoined with much irritation and pain it should be arrested as speedily as possible, otherwise it may lead to abortion through extension of the irritation of the lower bowel to the womb. The treatment of the diarrhœa of pregnant women does not differ from that of ordinary cases, for which the reader will do well to consult Dr. Bell's excellent treatise.* It very frequently happens that a moderate and almost painless diarrhœa is experienced very near the occurrence of labor. This need not be regarded with any apprehension, as it is a wise provision by which the rectum is emptied of its often indurated contents, and thereby greater space provided for the passage of the head of the child.

PAIN IN THE BACK, LOINS, etc., are very frequently complained of by pregnant women. Those of the back may be sometimes owing to exertion or fatigue, in the effort to support the erect position owing to the weight of the distended womb in front. *Nux vom.* is likely to prove useful in this case. *Rhus* and *Arnica* should also be thought of.

Pains of the loins and abdomen however, are perhaps generally of a neuralgic character. They may arise from mechanical pressure caused by the enlarged uterus, or from an affection of the pelvic nerves, sympathetic with the excited condition of that organ. If the former, we would expect relief from *Arnica* internally given and externally applied; if the latter, which is probably by far the most frequent, we must look for our remedies amongst that class of medicines which afford relief in neuralgias of the nerves of that region. *Aconite* will often be found useful and *Cupr. ars.* perhaps more frequently so, especially if the pains be of a spasmodic or crampy character. *Morphia*, in small doses will probably often prove efficient, as I know from experience it is one of our best remedies in neuroses of the nerves of the chest, abdomen and pelvis.

* "Dysentery, Diarrhœa," etc.

The pains occurring in the abdominal and uterine region not long before confinement, I have seen sometimes greatly alleviated or entirely removed by the alternate use of *Cypripedium pubescens* and *Caulophyllum*. I have little doubt that Arsenite of Copper will answer a good purpose under similar circumstances, although up to the present writing I have not had an opportunity of trying it. It is important these pains should be relieved, as I have long been of the opinion that their persistence renders subsequent labor tedious.

ISCHURIA or pain and difficulty in voiding the urine is a frequent attendant upon pregnancy. According to Croserio, when there is frequent desire to evacuate the bladder, attended with great pain in urinating, tenesmus vesicæ without the color of the urine being changed, *Nux vom.* is a specific. If the urine escapes involuntarily, *Camphor* is to be preferred. In cases of extreme vesical tenesmus, especially if associated with tenesmus of the rectum and evacuation of mucus, I would again advise Arsenite of Copper. In some of these urinary difficulties, especially urethritis or irritation of the urethra, *Equisetum hyemale* is specific.

Where the dysuria is owing to retroversion or anteversion of the womb, this organ should, at the earliest moment possible, be restored to its normal position. When it is not too forcibly jammed in the pelvis this object may be effected in the following manner. The urine should be first evacuated by the catheter, and the rectum emptied, if loaded, by means of an enema. The patient is placed upon her left side or back, or made to assume the knee and elbow position. We suppose the latter to be the most advantageous. The fingers, well oiled, are carried up within the vagina until the fundus is reached and its position, whether backward or forward, ascertained. It is then gently and very gradually pushed up. Dr. Playfair advises the introduction of a gum elastic bag high up into the vagina, to be distended with water by means of a syringe. He contends that the gradual, continued pressure thus produced is safer and more effective than that more suddenly and forcibly applied by means of the fingers. The water in the bag is to be occasionally let out, in order to give the

patient an opportunity to urinate, but is to be immediately refilled. To inflate the bag with air would probably answer better as being more elastic than water, and the only additional danger, the bursting of the bag, could, with care, be avoided.

When these measures do not succeed, the author just referred to, recommends to fully anæsthetize the patient for the purpose of relaxation of the tissues, and to secure greater freedom in manipulation. She is to be placed upon the left side near the edge of the bed, while two fingers of one hand (the left, if trained, doubtless the most convenient) or the whole hand, if practicable, are introduced into the rectum, with which the fundus, in case of retroversion, is pushed up, while, with one or two fingers of the other hand in the vagina, the cervix is pulled down. In case of anteversion we suppose he would have us reverse the process.

Retroversion of the womb may depend upon the increasing weight of that organ in the early stage of pregnancy while it is yet contained within the pelvis, perhaps abnormally large. But according to the view of Dr. Tyler Smith, which seems to be corroborated by more recent observations, in a very large proportion of cases it depends on pregnancy having occurred in a uterus already retroverted or retroflexed.

As we have here had occasion to refer to the use of the catheter, before proceeding, we will give the necessary directions for the successful use of that instrument. And first as to the choice of the most suitable one. There are the metallic catheter, the flexible gum elastic, and what is called the British, which is a tube of textile fabric covered with varnish. The latter is the best for all ordinary purposes. Indeed in cases of uterine displacement the urethra is sometimes so elongated by the bladder being pushed up, that the interior of that viscus cannot be reached by the ordinary metallic instrument.

The patient is to be placed upon her back near the edge of the bed. With the forefinger of the left hand well oiled, the operator parts the labia and ascertains the centre of the pubic bone or pubic arch. Carrying up the finger a little further, just within the bone, a slight elevation will be felt. This

marks the meatus urinarius or entrance to the urethra, or passage to the bladder. Retaining his finger in this position, he now directs the point of the catheter, also well oiled, along its palmar surface until it impinges upon the meatus. The instrument being held at an angle of about forty-five degrees to the horizon and gently carried forward in that direction, *drops*, as it were, into the bladder. No violence should ever be used, for, if properly directed, the instrument passes so readily as scarcely to be felt. When the quantity of urine contained in the bladder has nearly passed off, gentle pressure with the hand over that organ will contribute to its more complete evacuation. In desperate cases, where the catheter cannot be passed, and where the evacuation of the urine is absolutely necessary, it may be drawn off by puncturing the bladder one or two inches above the pubis with the fine needle of an aspirator.

SLEEPLESSNESS.—The pregnant woman is sometimes annoyed with sleeplessness, which proves a source of great discomfort, as well as a cause of impairment of health. She, in consequence, becomes nervous and miserable. Where there is no symptom co-existing with this wakefulness, requiring another medicine, a dose of *Coffea*, on retiring, will often afford relief.

A case that once fell under my observation, and in which *Coffea* was of little service, seemed to yield completely to *Nux vom.* This case was that of a young lady far advanced in gestation with her second child. In the case of nervous women the *Bromides* may be of service; think also of *Cypripedium* and other calmative remedies.

HÆMORRHAGE, in some of its forms, not unfrequently demands our interference. Although in the vast majority of cases the catamenia ceases immediately after conception, this, as we have already said, is not uniformly so. Sometimes there is a discharge of blood at the regular epochs, or nearly so, for two, three or more periods. This, if slight or very moderate, and not accompanied by bearing-down pain, need generally create no uneasiness, especially so, if it be known to be the habit of the patient. But if very copious and attended by labor-like pains, there is every reason to apprehend approaching abortion.

Prompt treatment in such cases is imperatively demanded, and unless the ovum is partially extruded or the os uteri so far dilated as to admit the point of the finger, it may be successful.

Should we find the patient flooding and at the same time suffering from violent bearing-down pains, as if all within must be forced out, Bell. is the remedy, and, if timely administered, will no doubt often arrest the hæmorrhage and prevent abortion.

We remember a case in point which occurred some years ago, where we found the symptoms indicating the above named remedy strongly marked and where miscarriage appeared to be imminent. Bell. was administered without, so far as we can remember, any other medicine or even the employment of any adjuvant. The result was most satisfactory,—not only the pains and hæmorrhage ceasing, but gestation proceeded satisfactorily to full term, and terminated in a fortunate labor and the birth of a well developed female child.

When there is excessive flooding, Viburn. opul. and Viburn. prun. are excellent remedies, and, if given in time, will often prevent abortion.

When the hæmorrhage occurs at the regular catamenial epoch, in the form of menorrhagia, Apoc. can. will no doubt often be found effective. Again, where a patient has once experienced slight hæmorrhages at monthly intervals, increasing in severity until they have resulted in abortion, it is well, upon the appearance of what may be the beginning of a similar series, to give Sabina until the hæmorrhage has ceased, and to anticipate its recurrence by the administration of the same medicine at the next and subsequent periods, until the usual time of abortion be past. I remember a case in which, I supposed, I averted this accident by the management just indicated.

Sabina and Ergot are, strangely enough, mentioned by Dr. Meadows as preventives of abortion. After speaking of Asaf. as a uterine tonic, he remarks: "There are other drugs also which undoubtedly possess this property in a very high degree—Ergot, for instance, and Savin. With the latter I have

had no experience, but with the former I have seen decidedly good results. The dose should be small, as, of course, we do not wish to produce any uterine contraction." This goes, very strikingly, to show how near a man's mind may sometimes come to the grasping of a great truth and, after all, wholly miss it.

These remedies he supposes to act as uterine *tonics*, an explanation utterly vague and unsatisfactory. He seems to have made no inference from the fact that Sabina is often used to *produce* abortion, the very accident he would employ it, in *small* doses, to prevent and that Ergot in large doses, by the violent contractions it produces, rapidly expels the contents of the gravid uterus. The singular phenomenon in these agents of blowing both hot and cold, is to be explained upon the assumption that in large doses they are stimulant,—in small doses, tonic. The great principle foreshadowed by their apparently contradictory action is wholly overlooked.

In the treatment of threatening hæmorrhages taking place in the course of gestation, it is all-important that the patient should at once assume the recumbent posture and maintain the utmost quietude, both of body and mind. She should, if possible, be placed in a cool, wellaired room, and have upon her person and her bed just sufficient clothing, and no more, than is necessary to prevent chilliness and discomfort.

We have here spoken of the treatment of hæmorrhage *during* pregnancy and that necessary to prevent abortion. Abortion itself and the resulting hæmorrhage will engage our attention in a future chapter of this work.

PRURITUS, or itching of the external genital parts, is often a source of extreme annoyance to pregnant women. The inclination to scratch is often irresistible, and in very sensitive subjects the irritation of the general system from the local affection is sometimes so great as to threaten convulsions. The causes of this ailment are not always very apparent, and probably differ somewhat in different cases. Sometimes it is, perhaps, attributable to the depraved secretions of the mucous membrane lining the labia and vagina; at others it seems to depend upon aphthous disease of that tissue. In some cases, finally, it may arise from want of proper cleanliness.

In the treatment of this affection absolute rest should be enjoined upon the patient, as the friction produced by walking about always tends to aggravate it. The most perfect cleanliness should also be observed. The remedies recommended for its successful treatment are Conium, Kreasote, Bryon., Arsen., Rhus, Pulsat., Silic., Sulphur, Lycop., Graphit. and Sepia—a goodly number, certainly. We have usually depended upon external applications for the removal of this trouble. Amongst these we have most successfully used a solution of the bi-borate of soda (Borax). This solution we have prepared extemporaneously, and without regard to any exact degree of strength, as this seems not essential to success, only let it not be too strong—say two drams to eight fluid ounces of distilled or rain water. Let the parts be first thoroughly washed with warm water and wiped dry. The above solution may then be applied by means of a cloth. The application should be repeated twice or oftener in the course of the day. A solution of the bi-sulphite of soda has also acted well in our hands. Some have strongly advised a very weak solution of the bi-chloride of mercury. Of this preparation I believe I can say nothing from personal experience. S. Tarnier, the annotator of Cazcaux's Midwifery, says he has succeeded in the more obstinate cases of the affection with a solution of thirty-one grains of the bi-chloride to sixteen and a half ounces of distilled water. Having first thoroughly cleansed and dried the parts, he advises a small sponge saturated with the fluid to be rapidly passed over the entire itching surface. "A smart burning sensation is the first effect of the application, which is alleviated by a few minutes' washing with cold water. Subsequent applications are less and less painful, and the cure is generally rapid."

CRAMPS.—Some women during pregnancy are greatly troubled with cramps by night in the calves of the legs; an exceedingly painful affection. According to Croserio, a dose of Verat. 30, at bed-time, succeeds admirably in relieving them. In nervous women he advises Nux vom. and Coffea. Cupr. met. is, according to my experience, the great remedy for cramps—a dose of the 2d or 3d dec., taken at bed-time, will usually procure immunity for the night, and persevered in

for some time, will generally break up the habit of regularly recurring nocturnal cramps. I have used with success some of the salts of copper, as the acetate. The arsenite of copper has also proved efficacious in my hands in arresting the nightly paroxysms.

ŒDEMA, not an unfrequent attendant upon pregnancy, will be fully treated of in the chapter upon Puerperal convulsions.

HÆMORRHOIDS.—The loaded state of the bowels common to pregnancy, in conjunction with pressure by the gravid uterus, often gives rise to very troublesome hæmorrhoids. For the relief of these we may resort to Hamm. virg., internally given and externally applied. Dr. Fordyce Barker strongly recommends Aloes, and as it is strictly homœopathic to this affection, we ought not to refuse giving it a trial. I have used it with excellent results in cases of hæmorrhoids following parturition. Dr. Barker claims to have made the discovery from a fortunate experience of his own. Having treated a lady for constipation with aloetic pills, she was rejoiced to find herself cured of piles, from which the doctor had not known that she had been suffering.

Æsc. hipp., so valuable a remedy in ordinary hæmorrhoids, will likely also prove serviceable here. In the case of women liable to this affection, it would be well to forestall its occurrence, by giving the remedy regularly toward the close of gestation. The same advice may be given with regard to Collinsonin 1st dec., when there is obstinate constipation.

It must be observed, however, that we are not so likely to succeed in *entirely* relieving hæmorrhoids occurring before labor as after it, or under ordinary circumstances. The cause of the trouble, in the former case, is still present and acting, and we cannot, for the time being, avail ourselves of the precept "*tolle causam.*"

As pregnancy affords no certain immunity from ordinary or prevailing diseases, women during gestation may suffer from any of these. In case of an attack, special care should be taken to procure relief for the patient as soon as possible, lest abortion or premature delivery should result, which would, in many instances, greatly augment her danger. The treatment of such

cases differs in no important respects from that of the same diseases occurring in other subjects. In this we have greatly the advantage over our allopathic competitors, whose violent remedies are, for the most part, wholly unsuited to the delicate condition of such patients, and it is to be feared, especially when unskillfully applied, not unfrequently attended with disastrous results. How common it is for pregnant women so treated to abort and afterwards die. This is a frequent occurrence in the case of continued fevers, acute exanthemata, etc.

The early, prompt and careful treatment of our patients, under the above circumstances, is important not only upon their own account, but also that of their unborn offspring. There is danger on the one hand of premature birth, and on the other, that if the mother be not speedily and wholly restored to health, her offspring, even if carried to term, may bear the impress through life, in an enfeebled constitution, arising from mal-nutrition during its intra-uterine life.

Dr. Hale, in a small, but very interesting work lately published (*Treatment of General and Special Disorders and Accidents of Pregnancy*), gives the following list of remedies as specially applicable, viz.: Arnic., *Æsc.*, Aletris, Bromides, Cauloph., Calc. car., Cimicif., Collin., Digit., Ferrum, Eupat. purp., Gelsem., Gossyp., Helon., Ignat., Nux vom., Pulsat., Secale, Scutel., Trill., Senec., Sep. ristil., Vibur. and Ver. vir.

We would advise the student to study thoroughly the pathogeneses of these drugs, most of which will be found satisfactorily given in Dr. Hale's *New Remedies*.

Before closing my remarks upon the treatment of the disorders of pregnancy, I may as well speak of a subject in this relation, as more properly belonging here than elsewhere—a subject which has not, as yet, shared professional interest and attention at all commensurate with its importance.

Every practitioner of experience will have met with young women who carry their products of conception until all the organs of the fœtus are fully formed, but which, from some cause or other, blights and dies, and is therefore necessarily extruded at a premature birth. Sometimes when the fœtus is born, it

has the appearance of recent death—at others, there are unmistakable signs of decomposition having set in some time previously. Some women repeatedly meet with this misfortune until they no longer conceive at all, and become thenceforth sterile.

Again there are women who carry their offspring to full term and bring them forth at maturity, but in a feeble, sickly condition, soon to become a prey to some one of the numerous diseases of infancy, not unfrequently, perhaps, one of a cerebral character, such as tubercular meningitis.

It becomes, therefore, a question of importance, whether or not these unfortunate results may be in whole or in part prevented, by a judicious treatment of the parent during pregnancy, and of the foetus itself through the parent. Such an attempt would have a large scope, embracing not only cases such as we have just now referred to, but all cases of hereditary tendency to disease. This is, therefore, a subject worthy of the profoundest research, for these, apparently hereditary tendencies, seem at this moment to threaten the extinction of the human race.

One of the most obvious indications, if we wish to secure the full and healthy development of the child, is to promote the highest degree of health in the mother during gestation. "Like produces like," is a general truth, well known even to the skilful breeder of stock, so that a primary object with him is, to maintain the best possible health and condition in his dams whilst they carry their young. The first thing, therefore, is to attend specially to the health of the pregnant woman, not only by enjoining upon her the strictest hygienic regulations, but by treating promptly all the disorders of her condition as just pointed out, and especially any actual diseases, should such occur. But this is not all. There are probably agents which have the power, from the first moments of foetal life, to modify nutrition in the embryo, and so to control it throughout the growth of the latter, as to result in a fully developed and healthy child at the normal term of birth. If this view be correct, the medicine, given to the mother, acts through her organism, upon the growing foetus within her womb.

Mrs. N., a young woman of moderate health, subject to dysmenorrhœa, and some leucorrhœal flow during a part of the inter-menstrual period, was some considerable time married before conception took place. I was called upon to attend her in labor at what she supposed to be about the termination of the eighth month. She was delivered of an emaciated child, below the usual size, and presenting the appearance of having been dead for some time.

The same lady again became pregnant and fell in labor about the close of the seventh month. The child presented by the breech, and was extruded with so much rapidity that the attendance of no one could be secured till after it was born. It was alive at birth, very small and lived but a few hours.

I proposed to this lady, should she again become pregnant to treat her during gestation with the hope of a better result. It was not long till I had the opportunity, for she notified me almost at the earliest moment she suspected her condition. I gave her Calc. carb. and Sil., alternate weeks, one powder daily—occasionally suspending medicine for one or two weeks. This treatment was continued till perhaps within two months of the close of utero-gestation. At full term she gave birth to a fully developed and beautiful female child, of good size and apparently having enjoyed good health up to the time of birth. This child was however unfortunately lost at birth. I had some four weeks previous detected a breech presentation or rather what would inevitably be such, unless the fœtus should change position. I warned the patient most urgently to send for me *in time* as I resided several miles distant. Unfortunately she neglected this injunction, and when I arrived, after the greatest exertions on my part, I found the child had been born for some time and hopelessly dead through delay of the after-coming head. The best methods were perseveringly used for resuscitation, but without effect.

In the summer of 1875 I was requested by a lady then staying at the York Springs Hotel, to see her little girl. She was a young woman, highly intelligent, the wife of a lawyer, and niece of one of the most eminent jurists of our State. This child, her second, was probably about eighteen months old.

She told me her first born had died at an early age of what was supposed to be tubercular meningitis, and the present one, perhaps during most of her life, had shown a similar tendency, disposed to be fretful, waked up suddenly from sleep in apparent alarm, very nervous and easily excited, and I discovered some erythematous eruption on different parts, although the weather was not excessively warm. I treated the child with considerable improvement during the stay of the family. Before she left I proposed to the lady that if she would notify me of the commencement of utero-gestation, if such should again happen to her, I would endeavor to prevent this unfortunate tendency in her offspring. Early the following winter the husband wrote to me, and the lady was treated as above. I since met with her at the Katalysine Springs of Gettysburg when she told me her child had been born as she supposed at the commencement of the ninth month, had appeared then, and continued to be, very healthy. She moreover stated her labor had been a remarkably easy one.

In the autumn or early winter of 1874 I attended Mrs. W., also a young woman in a premature labor, which was at least the third of that kind she had experienced. I had not seen her in the previous ones. After tedious suffering a foetus of small size was extruded considerably advanced in decomposition. The placenta was firmly held in the os uteri which obstinately resisted all attempts to insinuate the fingers. All the parts were very imperfectly dilated. I succeeded in removing only a portion of the after-birth. I left Ergot to be taken in small repeated doses, and under its influence, after considerable suffering, the remainder was extruded during the succeeding night. The patient evidently suffered from septicæmic poisoning in consequence of having retained a dead foetus, for some time in a putrid condition. For this I gave Ars. a., and continued it for many days. Under this treatment she regained much better health than she had enjoyed in the intervals of her former confinements. She again became pregnant about the beginning of the present year (1878), and was treated nearly throughout the whole course of utero-gestation with Calc. and Sil., and other remedies, *pro re nata*.

During the autumn she gave birth at full term, to a remarkably healthy, vigorous boy, in all respects well developed and of large size. She made an excellent recovery and the child thrives.

Perhaps the agency of Calc. and Sil. may be questioned in this latter case, and the fortunate result rather attributed to the improved condition of the mother's health. But admitting this, it is still a case in point. In all probability this patient's health had suffered after her former miscarriages, through septicæmic poisoning, and no proper attention being paid to this, she conceived again when not in condition to nourish properly and bring to healthy maturity the product of conception. But when as above, the blood poison was effectually counteracted by the persevering use of Ars. and her health restored to its normal standard, she was then prepared to impart healthy growth to her offspring.

From repeated trials however, I am pretty fully convinced that Calc. and Sil. have a decided effect upon the nutrition of the fœtus in utero. To explain the precise process by which this is accomplished, would be as difficult as to explain the phenomena of life and growth generally. Healthy nutrition is probably uniform in its action, and uniform in its result, namely a well developed and healthy organism—or in other words an organism capable of performing its functions in a harmonious manner. On the contrary any aberration from normal, healthy nutrition tends to the production of an organism inharmonious in its action, the result of which is ill health more or less pronounced, according to the greater or less divergence from the normal standard.

When there is a tendency to malnutrition in the fœtus, whether from defective health or idiosyncrasy of the mother, or any other cause, if we can introduce into the fœtal circulation, through that of the parent, an agent capable of making an impression upon the vitality of the child, similar to that of the disturbing cause already in action, we probably for the time bring to a standstill the mal-nutrient process, and so divert nutrition from its abnormal course that it may regain and thenceforward pursue a normal one.

If the numerous congenital dyscrasias which now seem to threaten the extinction of the human race, at least human health and well being, be ever annihilated or even diminished, we think it will be through some such process as the judicious treatment of the pregnant woman and the fœtus within her womb even from its embryo state.

We are far from thinking Calc. and Sil., the only agents available for this purpose. Doubtless there are others that stand ready to play their parts as soon as their powers are known, and only await our more perfect knowledge to be sent upon their errands of good will to our race. A wide field of exploration is here open, and laurels grow upon every side to wreath the brow of the successful explorer. What we want is patient and profound research, accurate observation, and logical deduction from the facts ascertained, irrespective of any preconceived whim or cherished theory.

CHAPTER III.

ABORTION AND PREMATURE DELIVERY.

In the preceding chapter we have spoken of the treatment of hæmorrhage during gestation, when likely to lead to abortion, and also of that of uterine contractions, tending to the same result. It is here our design to indicate the best means of managing the case where that accident cannot be prevented or has actually occurred. There are instances wherein no remedial or preventive measures will avert the catastrophe, and there are others again where this might have been effected, but, from the absence of medical aid—we are summoned to the patient after abortion has taken place.

In the term abortion we will include all those cases wherein the contents of the gravid uterus are expelled before the

viability of the fœtus. The fœtus is usually incapable of maintaining an independent existence before the end of the sixth or beginning of the seventh month of utero-gestation. The exceptions to this rule are so rare as not to affect its general correctness. Indeed few survive, born long before the completion of the seventh month.

The causes producing abortion may be arranged in two classes, viz. :

1. Those which act directly upon the womb and induce the expulsion of its contents.

2. Those which occasion the death of the fœtus, and thus lead to its extrusion as a foreign body.

In regard to susceptibility to the influence of the former, there is a vast difference in women. Those of extreme irritability of the nervous system, are by far the most liable to the accident from this class of causes. Among these we may reckon diseases affecting the womb, such as tumors within its cavity or its walls, ulceration of the cervix, rigidity of its fibres resisting the distension necessary to the accommodation of the growing fœtus contained within it. Strong and sudden mental emotions, irritation of nerves, although not in immediate proximity to the uterus, as that of the trifacial, by the extraction of a tooth, those of the lower bowel, by the existence of ascarides, by accumulated feces, violent purgation, or dysentery, may all give rise to abortion, by exciting contractions of the womb. The same, perhaps, may be said of congestion of that organ, through excessive sexual excitement. In short, whatever by reflex action powerfully excites the uterus, as injuries to organs or parts in sympathy with it, whether accidental or operative, may give rise to abortion. It may be remarked that impending abortion, through this class of causes, is often amenable to treatment, if our aid be invoked in due time; at least we should not despair of success, but persevere in our efforts until dilatation of the os, or the partial extrusion of the ovum, demonstrates that longer continuance is useless.

The causes of the second class, which, directly or indirectly, destroy the life of the fœtus, are also very numerous. Among

them may be reckoned falls, detaching more or less extensively the placenta, blows upon the abdomen, hæmorrhage from whatever cause, acute, and especially eruptive diseases of the mother, idiopathic morbid conditions of the fœtus itself, either in acute or chronic form, arising, it may be, from taint inherited from one or both parents. When the life of the fœtus is destroyed, its early extrusion from the uterine cavity is mostly inevitable; indeed, a consummation rather to be desired, than prevented. So long as fœtal life is intact, the functions of the healthy womb are in perfect consonance with the development of the ovum contained within it. But the moment that the life of the fœtus ceases, the ovum becomes a foreign body, and as such produces an abnormal irritation in the nerves supplying the organ, which before felt only a healthy stimulation from its presence.

The extrusion of the fœtus usually takes place within a few days after its death. But this is not always the case. It may be retained until near or fully up to the usual term of gestation. In the case of twins, we have sometimes found that one had ceased to live, apparently at an early period of its intra-uterine life, while the other had continued to develop, and was born alive, at or near the usual time. Such was the case of an unmarried girl I once attended in labor, who had concealed her condition up to the last moment, and even denied it when agonizing under the throes of child-birth. When she first permitted me to examine her, I found a small fœtus blocking up the passage. This I removed, and from its very diminutive size and other indications, I believed it had died a considerable time before. Another head presented, which proved to be that of a child which had attained nearly to the ordinary intra-uterine growth, and which was born alive, but died in convulsions within a few hours. If I might believe the young woman, who had always heretofore borne a good character, her pregnancy was the result of a single coitus, and she had carried these twins to the close of the eighth month. I remember another case of premature labor, where the skin of the fœtus broke and peeled, simply by passing the mother's parts, and thus gave evidence of somewhat advanced decom-

position. There are cases on record where the product of conception has come away by shreds in a very putrid state. It is therefore desirable that the contents of the womb should be evacuated shortly after fœtal life becomes extinct. By the retention of the ovum there is always risk to the mother's health, and, perhaps, even life, through septicæmia; although, through the wise provisions of a kind Providence, this certainly happens less frequently than one would apprehend, and this, probably, because there is no surface in condition freely to absorb the poison.

Abortion occurs by far the most frequently within the first three months of pregnancy. It is therefore impossible to determine with certainty, whether the ovum still retains its vitality or not. If, however, we are called in time, it is our duty, leaving this out of view, to use all means in our power to prevent so serious an accident. If we confine ourselves to the employment of strict homœopathic measures, and even the use of adjuvants not inconsistent therewith, we shall do no harm. If extrusion be necessary, nature will very generally, in despite of our efforts, complete her process for the safety of the patient, and leave to us the humbler task of attending to the after-treatment, which, by the way, is all-important. As we have already said, it is of this we principally designed to speak in the present chapter.

In order to instruct the student in the nature of the duties which will usually devolve upon him in such cases, I will detail the treatment of one, which may be regarded as typical:

I was summoned early in the morning to see a young woman, wife of a laborer, who lived some miles distant. The messenger, either through stupidity or want of proper information, led me to believe that the patient had had a miscarriage some two or three days before, and was now suffering from some drawback in her convalescence. It was not till on my way that I learned that she was flooding alarmingly and was almost lifeless. When I reached the place I found her pale as a corpse surface cold, pulse scarcely, if at all, to be felt, almost speechless, hæmorrhage still going on. Learning a few of the particulars, it appeared that on the previous afternoon she had been

walking across a field near to her house, when she had inadvertently stepped into a gulley, which had given her a very severe shock, attended with considerable alarm. The effect had, however, apparently passed off, and she had retired to bed in the evening as usual. In the night she awoke with severe bearing down pains, accompanied by profuse hæmorrhage, which increased in violence and continued up till the time I saw her. What should I then do? Should I sit down by the bedside, and quietly interrogate the patient as to her subjective symptoms, so as to ascertain the indicated remedy? But she was unable to answer my questions satisfactorily, if at all. The objective symptoms were such as I have detailed, and would scarcely lead me at first trial to select a medicine upon which I might confidently rely at such a critical moment. Instead of this, however, I called forthwith for a bowl of warm water, a clean towel, a piece of soap, and a little lard without salt. I hastily but thoroughly washed my hands, cleansing them from all impurities they might have contracted, smeared the left one with the lard, thereby softening the surface and lubricating it, the more easily to pass through a narrow channel. I had the woman turned upon her left side, and properly supported by other women who were present. If too weak to be turned she might retain her position upon the back—I prefer the left side. I then cautiously and tenderly introduced the index and middle fingers into the vagina, and carried up their points to the mouth of the womb. This, with all my care, caused a good deal of pain, for the walls of the vagina are not so dilatable in a case of abortion as in labor at full term. I, however, insinuated the fingers slowly, and the vagina gradually yielded to the distending force. When the points of the fingers reached the os uteri, I felt the ovum projecting—partly extruded, but still firmly embraced and held by the os. It was not sufficiently extruded, however, to allow me to take hold of it with the points of the two fingers brought together as the blades of a forceps. I, therefore, at first acted upon it very much as we do upon an apple, in order to turn it out of a narrow pocket in which it is tightly embraced. After a few moments operating in this manner, I was able to obtain sufficient

purchase upon the ovum to seize it between the points of the fingers, as with a forceps, and to extract it entire, placenta and all. The efforts of the left hand are greatly aided in such cases, by pressing down the womb with the right, applied externally. The hæmorrhage immediately ceased, and then I selected a remedy suited to the condition of the patient, and enjoined perfect quietude, the room to be kept well aired, and all sources of excitement and disturbance to be removed. Next day I called, found the patient had fully rallied, pulse sufficiently full and strong, and of very moderate quickness, and every thing promising speedy recovery. Enjoined recumbent posture as long as after confinement at term. The patient did well and rapidly regained her strength.

It is not to be understood that any particular merit is claimed for this management, or that there is, indeed, anything peculiarly novel or original belonging to it. We have selected the case simply to illustrate, in a more forcible manner than could be done by direct didactic precept, the duties which the young practitioner is ordinarily required, in such emergencies, to perform.

There is sometimes considerable difficulty in getting sufficient hold upon the ovum or placental mass, when, as described above, it is partially extruded and still embraced by the os uteri. The fingers used for that purpose can only act by approaching each other sidewise, and in that direction cannot exert much muscular force. The points, moreover, by which alone we can take hold, do not perfectly antagonize each other, as the middle finger is somewhat longer than the index. I have, however, I believe, generally succeeded with the fingers alone, as indicated above. There are, nevertheless, different forms of forceps constructed to aid in this operation, which, properly used, may, in some instances at least, answer a valuable purpose. Were I to use an instrument, I would prefer one constructed in a manner similar to the larger ones employed for removing nasal polypi, the mandibles being somewhat broader, and a slight curve given to the blades, to accommodate it the better to the curve of the pelvis. To employ it, we introduce the fingers as if we intended to use these alone, pass

them up till they impinge upon the mass to be removed. We then glide the point of the forceps along the palmar surface of the fingers till it reaches the same point. The blades are then opened and, directed by the fingers, are made to take hold of the partially extruded ovum or placenta as the case may be. The instrument is then carefully withdrawn, bringing in its grasp the object seized. Special care must be taken that the instruments do not fasten upon the maternal parts, and to avoid this it is well to appeal to the feelings of the patient when compression is first made.

The hand, however, so far as it can be used, is always the best obstetric instrument; for the obvious reason, that as obstetric operations are usually performed without the aid of the sense of sight, the hand furnishes, in its stead, the sense of touch. The hand, moreover, if perseveringly educated, is capable of much more extensive application than is generally supposed.

I have since attended the same woman whose case I have above detailed, in a second abortion, but at a somewhat more advanced stage of utero-gestation. The fœtus had been extruded before my arrival, but the placenta was retained and the os uteri contracted. I could not by any effort reach the after-birth, which, I suspected, was not yet detached. I left the patient tincture of Ergot, to be taken in small, repeated doses, so as to keep up uterine action for several hours. I visited her again in the evening, when I found the os uteri somewhat dilated and the after-birth slightly protruding, but not sufficiently so, to be taken hold of, as in the case before related. I administered chloroform to the patient, introduced, very gradually, the whole hand into the vagina, carried the fingers up sufficiently far to take hold of the placenta, and withdrew it completely with the adherent membranes. Dr. Playfair, I observe, in his late work, also recommends this method.

When the ovum and its appendages have been removed, if the hæmorrhage does not cease, we should then carefully select a remedy in accordance with the symptoms. If, however, this should not soon succeed, and the flow be so profuse as to

endanger life, or, at the least, cause great loss of blood, with extreme prostration and other attendant evils, we had better at once resort to the tampon. This expedient, although not to be thought of, in cases of post partum hæmorrhage following delivery at term, is altogether allowable, and likely to prove efficient in arresting the alarming discharge which sometimes follows abortion. A clean silk handkerchief is pushed up into the vagina, little by little, until that canal is completely filled—the first portion introduced to be carried up into contact with the os uteri. Dr. Playfair recommends instead of the handkerchief pledgets of cotton-wool soaked in water and covered with glycerine to prevent offensive smell. Each of the pledgets should have a string attached to facilitate withdrawal, and the whole should be removed in six hours. In such cases it will be well to administer some septicæmic remedy, such as Ars., Arn., or Bap. t.

When abortion takes place at a quite early period of gestation, the entire ovum with all its appendages is generally extruded. But at a later period the fœtus alone is usually expelled, leaving behind, at least for a time, the placenta and membranes. When these latter do not follow spontaneously, or cannot be removed by measures such as we have detailed, it is sometimes difficult or even impossible to extract them, owing to the slight dilatation of the os uteri, which may even obstinately close and thus imprison the secundines. It has therefore been a question upon which opinions have differed, how far our efforts at extraction should proceed. From the impossibility of introducing the hand, and the difficulty of insinuating even the fingers, into the womb, if we would succeed in the removal of the placenta we must resort to the use of instruments. We have then to encounter, on the one hand, the risk of using an instrument pretty much at random, undirected either by the sense of sight or touch, and on the other that of hæmorrhage from retained placenta, and this is often very profuse—even alarming. Ultimately there is danger of the decomposing mass, if still retained, giving rise to serious, if not fatal septicæmia.

If the hæmorrhage be not very violent and unyielding to

well selected remedies, including mechanical appliances, we decidedly prefer taking the latter risks. I have seen the placenta, when the hæmorrhage had been controlled by remedies, after being retained for some days, extruded, at least so far as to be within reach, in a very putrid condition, and no ill effects followed. Indeed we believe this will often happen, and by watching our opportunity we can ultimately succeed in removing the mass. On the other hand when the hæmorrhage is violent at the beginning, and after being apparently arrested, sets in again and again, so that the patient's life is manifestly jeopardized, it is then our duty to act more perseveringly in our efforts to remove the placenta. In such cases we may derive much aid from the use of Barnes' dilators, to open the passage and give us more perfect access to the interior of the womb. The method of using this instrument will be given further on. Ergot. in small doses, perseveringly continued, will often succeed in expelling or bringing the secundines within reach in a few hours. I strongly advise its use. Ergot. may be given in alternation with Act. rac. In our efforts to control such hæmorrhages the various medicines usually employed should be consulted—Trill. pen. has often been found efficacious—Sabina also when indicated will prove an excellent remedy. For the slow, continuous and wasting hæmorrhage which often follows abortion I have found Nux mosch. 1st dec. prove effectual.

It not unfrequently happens, after abortions attended by profuse hæmorrhages, that the patient remains for some time in a very feeble condition, the return to health being slow and often interrupted. This sometimes is the mere effect of loss of blood; at others there may be a chronic inflammation of the womb existing, more or less extensive and severe, as commonly indicated by the symptoms. In the former case Cinchon. will be of service, together with proper hygienic regulations, including gentle exercise in the open air, the cherishing of a cheerful and hopeful state of mind, and perfect regularity in domestic habits. The diet should be nourishing, and such as is best suited to replenish the system with an abundant supply of rich and pure blood. For this purpose good milk, where it

agrees with the stomach, will do well. Meat broths, beef, chicken, turkey, unless the stomach be too weak for the digestion of the latter or the season too warm, may also be allowed with the prospect of benefit.

When the symptoms indicate the existence of inflammation, this of course should be treated according to indications. Where debility depends, as it mostly does, upon positive disease, nothing can be more absurd than to attempt, as many do, to brace up the system with the so-called tonics, which may have no curative relation whatever to the case. In the condition of things which we have here in view, sometimes dependent upon a slight degree of septicæmia, we have found *Ars. a.* very serviceable. *Nux vom.* is recommended by Hartmann, and Bell. where there is bearing down pain.

When the contents of the gravid uterus are expelled after the close of the sixth month and before the period of normal labor, the accident is usually termed premature delivery. The distinction laid down between this and abortion on the one hand or labor at full term on the other is not of much practical importance. There is nothing peculiar in the treatment to distinguish it from that of abortion when the fœtus is dead, or from that of normal labor when it is living, unless we may except the management of the after-birth. In the case of abortion at an early stage the adhesion of the placenta to the surface of the womb is very slight, and hence the ovum with its appendages is expelled at once; whereas at a later period the adhesion is more firm, and consequently the placenta is not only often left behind, but even difficult of detachment. But as gestation approaches its natural limit, the connection between the placenta and womb becomes less firm and thus, although it may not be extruded by the contractions of the womb which expel the fœtus, it is generally not difficult of detachment and extraction, as dilatation of the parts is greater, and being larger than in cases of abortion, it is more important to effect its removal.

When a child is prematurely born and living, we should resort to all suitable means to preserve its life. The management most suitable to secure this end will be given in the chapter upon Induction of Premature Labor.

The management of the mother differs in no respect from that we have indicated in cases of abortion, or that we shall hereafter recommend as proper after normal labor.

CHAPTER IV.

LABOR.

When the patient escapes the accident of which we have fully spoken in the preceding chapter, as happens in the very large majority of cases, the fœtus continues to develop within the womb until it has attained to that degree of maturity which fits it for extra-uterine life. A vital process now sets in, by which the contents of the gravid uterus are expelled,—a process attended usually with much suffering, and even voluntary effort, and, therefore, called labor.

The time at which labor takes place, is commonly at or near the tenth catamenial period, reckoning from the one last before conception. And as the catamenia usually ceases immediately when gestation commences, we commonly reckon upon the tenth epoch after the last appearance of the flow.

The above is the general rule—to it, however, there are frequent exceptions, more or less divergent. Mauriceau states that out of four hundred and five cases at the Hôtel Dieu the term of pregnancy varied from six months to eleven months and eight days. These, however, are extremes very far from common. The normal term of utero-gestation may be set down at two hundred and seventy-five days. Dr. James Reid recorded forty-three cases in each of which there was but a single coitus, and found that the average time of delivery was as above, two hundred and seventy-five days. Dr. Montgomery, from similar observation, places the average at two hundred and seventy-four days, and Dr. Matthews Duncan at

two hundred and seventy-five days, or thirty-nine weeks and one or two days. Conception may be assumed to take place in the vast majority of instances within a few days of the disappearance of the menstrual flow. This is stated upon good authority, at from seven to ten. Puchet, an eminent French naturalist, held that there were no exceptions to this rule, and the late Prof. C. D. Meigs was, at least, strongly inclined to the same belief. The exceptions to the law are undoubtedly rare, while, at the same time, they no doubt occasionally occur. It is possible that the fecundation of the ovum may, in rare instances, not take place for some days after coitus, as it has been shown that the spermatozoa may retain vitality for at least a week after the intromission of the semen.

It is, in most cases at least, very desirable to be able to predict the time of the expected confinement of a patient whom we are engaged to attend. Women themselves have usually fixed upon a time, but they are frequently very wide of the mark. They mostly calculate from the date when they remember to have first noticed the movements of the child. This, for various reasons, is very fallacious. The *first* movements may not have arrested their attention; nor is it certain that these, in every case, occur at or very near the middle of utero-gestation, as they assume. A fœtus of strong and vigorous growth is likely to make itself felt, by some days, earlier than a feeble one. Besides, other sensations in the mother may readily be mistaken for the movements of the child; an instance of which, we think, we once met with, causing an error in computation of perhaps two months. When we wish to ascertain, with as much precision as possible, when we shall be called to attend a patient in labor, we should learn from her the time of the *disappearance* of the catamenial flow. "Labor, according to our experience," says Dr. Hodge, "generally occurs two hundred and eighty or two hundred and eighty-three days after the last appearance of the catamenia." Prof. Nægélé advises us to count back three calendar months from the disappearance of the menstrual flow; and then add seven days, which will give us the month and day of the month upon which we may expect labor to set in. Thus, if a

woman tells us her last menstrual flow disappeared on the 10th of January, counting back three months, brings us to the 10th of October, adding seven days, gives us the 17th of October, when may expect her confinement to take place.

Much discussion has been indulged in as to the immediate cause of labor. Why does the uterus contract at a fixed time and expel its contents? Numerous answers have been given to this question, claiming to account for the phenomenon of labor upon strictly physical principles; but all are open to serious objections, and some absolutely untenable. The most reasonable solution of the problem is that it has been so arranged by the Omnipotent Creator, that when the fœtus has reached that degree of development by which it is wholly fitted to maintain an independent life, it shall be extruded from the womb of the mother, where it can attain no higher perfection, and enter upon another stage of existence, in which its faculties may be more fully developed, and where it may be fitted for a still higher and immortal state. It is an original law of woman's constitution, which, it is true, disturbing causes may occasionally affect, that she should give birth to her offspring at the end of nine months after conception, as it is that her customary evacuations should take place at a period of twenty-eight days. This may be said to be nothing more than a virtual confession of our ignorance of the intimate nature of the cause of labor; it may be so, but is perhaps as near an approximation to an explanation of it as we shall be able to reach.

There are usually well-marked precursory signs which herald the near approach of labor. The abdominal tumor, which had risen so high as nearly to approach, or even reach the ensiform cartilage, sinks lower, the abdomen flattens and spreads toward the sides. The woman suffers uterine pains, and occasional contractions of the womb are felt. Respiration, which had been embarrassed from pressure upon the diaphragm, is now more free, that pressure being, to some extent at least, relieved. As the womb has sunk lower into the pelvic cavity, the bladder is crowded, and the necessity, to urinate frequently, often urgent. The external parts become relaxed, and discharges of

a glairy fluid take place. The woman becomes more and more helpless and uncomfortable. She is often despondent and tearful, longing for the arrival of the hour when she can say her troubles are, for the present, past.

After frequent premonitions labor sets in. The patient is often awaked from her slumbers in the night, with severe pain in the back or region of the womb, which entirely incapacitates her from further sleep. These pains are generally paroxysmal, occurring at first at long, but usually regular, intervals. Sometimes, however, they set in at once with violence and frequency, leading her to the belief that her child will very shortly be born, which, occasionally, but very rarely happens. More frequently, even when the pains are close at first, they become more distant, and the termination of labor is postponed much longer than was expected. It is not, however, every accession of pain, as above described, that ushers in labor. Sometimes these symptoms pass away and real labor does not take place for two or four weeks. As labor, perhaps, usually sets in at or near a catamenial period, it not unfrequently happens that such an onset of pain occurs at the epoch just preceding that at which labor eventually takes place—that is, about four weeks previous. It is of some importance to be able to distinguish these “false alarms,” as they are designated by the women, from the commencement of genuine labor. In the latter case, if a vaginal examination be made, the os uteri will generally be found low, sometimes at least slightly open, the neck of the womb effaced, and upon the occurrence of each pain, the os uteri, if the finger be placed in contact with it, will be felt to be distinctly affected. This symptom, especially, is wanting in the case of false pains. Such pains do not necessarily increase in severity, whereas those of genuine labor do; this increase, however, may be so gradual at first, and even interrupted, that it is not always available as a diagnostic symptom.

When the pains are really those of labor, if the hand be placed upon the abdomen, the womb will be felt to contract, harden and alter its shape. This circumstance, too, will distinguish incipient labor from a fit of colic, which some females,

wishing to conceal their condition as long as possible, will pretend to have.

The pains of labor are always conjoined with uterine contractions, so that in common language the former term is considered synonymous with the latter. Why the *contractions* of the womb should be attended with pain, is by no means easily comprehended. This organ may be regarded as a hollow muscle, and its contractions similar to those of any other muscle, which take place without any suffering. We raise a weight with the hand by means of the contraction of the muscles of the arm. We are conscious of exertion, but not of suffering. Various explanations of this phenomenon have been given, but as they are all unsatisfactory we need not repeat them. We here speak of the pain accompanying the contraction of the womb—that arising from pressure of any part of the child upon the soft and tender structures of the mother is easily accounted for.

At the commencement of labor the os uteri is usually found soft and yielding, through a preparatory physiological process which has been going on for some time in anticipation of the great approaching event. We say *great*, for rightly considered in all its aspects it is truly so—nothing less than an immortal being born into the world. This softening and distensibility of the os may, in very many instances at least, be aided by proper treatment, begun a few days previous to labor. This will be found more fully treated of in another place. The first contractions of the uterine fibres, are directed to the dilatation of the os, so as to permit the fœtus to pass.

When true labor sets in the muscular fibres, of which the structure of the womb is principally composed, begin to contract at pretty regular intervals, and with increasing energy. These contractions have indeed been going on for some time insensibly—some allege during the greater part of utero-gestation—but now they become painful. The intervals gradually shorten as their force increases. The fibres of the womb being distributed in all directions, and all contracting, not even excepting the circular fibres of the os, it is manifest that the action of the latter must be antagonistic to that of the longi-

tudinal fibres of the body of the womb. The latter however being the more powerful, those of the os gradually yield, the result of which is the gradual dilatation of the outlet of the womb. When dilatation is partially accomplished, the lower segment of the membranes containing a portion of the amniotic fluid, is usually forced down through the opening, forming what is called the "bag of waters," and which, by its wedge power, under the continued action of the womb, seems to complete dilatation.

That the os uteri *may be* dilated by mechanical force, is manifest from the effect upon it, of Barnes' dilators and other like contrivances; that it may dilate without mechanical force, is proven by the fact that it is sometimes found almost fully dilated, when no mechanical force has been employed, and when from the nature of the presentation the presenting part did not press upon it, and no bag of waters was protruded.

When the general condition of the patient and especially that of the parts concerned in parturition is normal, no extraneous aid is needed in producing dilatation of the mouth of the womb. It is one step in the process and an indispensable one, and we have reason to anticipate *a priori* from analogy, that an all-wise Creator would make as ample provision for this as for any other, so that when the moment arrives that dilatation is needed, as a general thing dilatation will be accomplished. Indeed it is often effected by a kind of spontaneity, which we are at a loss to explain.

When the os uteri is fully dilated, the character of the pains is changed. Instead of those of a worrying, grinding nature, felt in the early stage of labor, they now become forcing and expulsive. The patient is disposed to bear down, and the action of the abdominal muscles is invoked to aid in the completion of the great work. Indeed every muscle of the body is subsidized to bear its part. The feet are propped against some solid object, the hands take hold of whatever may be within their reach, the face is distorted and congested, the lungs are inflated with air, to serve as a fulcrum or prop, and respiration is suspended, giving a dark, suffused appearance to the countenance, the membranes rupture, and the liquor amnii

is discharged frequently with a gush, the head of the child descends, reaches the floor of the pelvis, distends the perineum, and finally with a throe of inexpressible agony, and often a terrific shriek is born into the world. This accomplished, the uterus generally rests for a moment. But the whole task is not yet completed, and soon it resumes its action. The next pain usually expels the shoulders, trunk and lower limbs of the child, and then the labor is complete, only that the after-birth, consisting of the membranes and placenta yet remain behind. The placenta, the organ through which the connection between mother and child has been maintained during the intra-uterine life of the latter, and which it will be remembered is intimately attached to the inner surface of the womb, is usually separated by some of the last contractions, but is not generally thrown off with the fœtus itself. After a few moments repose, the womb again makes a final effort to get rid of its remaining contents, and the placenta and its appendages are extruded at least into the vagina, whence they are readily removed by the hand of the attendant. Such is the process and such the termination of the simplest form of labor.

It has been customary with authors to classify labors with a view to practical advantage. It is doubtful however whether any such advantage has been hitherto gained by such attempts. Almost every writer proposes a classification differing somewhat from that of all others, so that confusion rather than elucidation seems to be the result. The most simple arrangement is that which divides labors into two classes, natural and preternatural. But even here the definitions given differ so much, that little practical advantage results; what would be a natural labor in the hands of one practitioner would become a preternatural one in the hands of another. If we take for instance the definition, natural labor is that which may be terminated by the natural powers alone—preternatural that which requires manual or instrumental aid, it is manifest that such classification would indicate no real and permanent practical distinction; for in the judgment of one it would be proper in a given case to leave it to nature, whereas another would deem it expedient in the same case to interpose the resources of art.

It is not always possible to say with certainty whether the labor may be terminated by the natural powers or not—and if with the idea of classification in our heads, we rank it with *natural* labors we may let it alone when the safety of the patient requires our aid, and on the other hand should we classify it with preternatural labors, we may interfere when nature does not thank us for our intermeddling.

We shall therefore leave those who are desirous of studying the various classifications of the authors, to consult larger works, and if they can derive any practical benefit from their labors in so doing, it will be so much the better. Within the limited space we have proposed we will give the best instructions we can furnish by *individualizing* cases and designating their management accordingly. And if we can induce the student to adopt and follow out this method in practice we will not consider our efforts as expended in vain, nor do we think that either he or his patients will ever regret his having adopted that course.

CHAPTER V.

MECHANISM OF LABOR.

As already stated in the preface of this work, we assume that the student of practical midwifery has already made himself familiar with the structure of the female pelvis, in his study of anatomy. It is therefore unnecessary to repeat the description here, which will be found in any anatomical work; preferring to reserve the space for other purposes. We may also make the same assumption with regard to the foetal head. It will be necessary, however, to add something to the usual descriptions given of the latter in books on anatomy, in order to understand more clearly the relation of its diameters to those

of the pelvis, in the mechanism of labor. They are the objective parts to be considered in the discussion of this subject. And here we would premise that the student should not content himself with studying merely the bony structure of the pelvis, but should make himself familiar with it in its recent state, as lined with soft structures. No plates, however well executed, can give an adequate idea of the pelvis with which the obstetrician has to deal, as made up, not only of a bony frame, but, as in the living woman, of flesh and blood. This study is properly commenced in the dissecting room, but completed at the bed-side, by careful examinations of the patient under obstetrical management.

The entrance from above into the *true* pelvis, or space included in its bony structures, is called the superior strait; the portion immediately below this is the cavity of the pelvis; whilst the lower outlet is called the inferior strait. The several diameters of these divisions are of the utmost importance, in treating of the mechanism of labor. These are the antero-posterior, measured from before backward; the transverse, measured from side to side, and the two oblique, measured diagonally. We are in the habit of considering the different parts of the pelvis mentioned, as having each its plane upon which its diameters are measured:—thus we speak of the plane of the superior strait, of the cavity and of the inferior strait. The antero-posterior diameter of the superior strait extends from the sacro-vertebral angle, or promontory of the sacrum, to the symphysis pubis—the transverse from one side of the pelvis to the other, and the two oblique from the sacro-iliac symphysis of the one side to the linea ilio-pectinea of the opposite. Definite measurements have been assigned to each of these diameters, but of course they vary in different subjects. The antero-posterior diameter of the superior strait is reckoned at four inches—the transverse on the skeleton at five inches; but in the recent state it measures about an inch less, on account of the space occupied by the psoas and iliac muscles. The oblique diameters measure each four inches and a half.

The antero-posterior diameter of the cavity of the pelvis extends from the middle of the symphysis pubis to the

middle of the sacrum, and measures about five inches, in consequence of the hollow of the sacrum, which is about one inch deep. The transverse diameter is, at its superior part, about four and a half inches, diminishing, however, as we descend.

The antero-posterior diameter of the inferior strait extends from the point of the os coccygis to the inferior part of the symphysis pubis—the transverse from one tuberosity of the ischium to the other—the two oblique from the tuberosity of the ischium on the one side, to the middle of the sacro-sciatic ligament of the other. All these diameters are reckoned at about four inches, but the antero-posterior one may be extended to five inches, by the retrocession or yielding of the os coccygis.

As regards the diameters of the fœtal head, it is manifest, as many may be imagined as there are opposite points upon the cranium. Those most important, however, in relation to the mechanism of labor, are the following: the occipito-mental, extending from the occipital protuberance to the point of the chin, estimated at 5.25 to 5.50 inches—the occipito-frontal, from the occiput to the centre of the forehead, 4.50 to 5 inches—the sub-occipito bregmatic, from a point in the sub-occipital space midway between the protuberance and the margin of the foramen magnum, to the centre of the anterior fontanelle 3.25 inches—the cervico-bregmatic, from the anterior margin of the foramen magnum, to the centre of the anterior fontanelle, 3.75 inches—the transverse, or bi-parietal, lying between the parietal protuberances, 3.75 inches—the bi-temporal, between the ears, 3.50 inches—and the fronto-mental, extending from the apex of the forehead to the chin, 3.25 inches.

We give the above as the estimates laid down by Dr. Playfair. Authors, however, differ very considerably upon this point, as might be expected from the very nature of the case. Their measurements have doubtless been made under different circumstances, and this alone would account for discrepancy of result. In addition to this, every one knows that infantile heads differ very much in size and shape, a circumstance which would cause a proportionate difference in their respective diameters. We are, therefore, not to regard the foregoing estimates as exact, but sufficiently near approximations to the truth to answer all practical purposes.

The object of nature, so to speak, in the process of parturition, is to bring and maintain the long diameters of the head, or of whatever may be the presenting part, throughout its whole descent, in coincidence with the long diameters of the pelvis. This is effected by forces which we are about to consider, and according to a law which we will shortly attempt to elucidate.

When the membranes have been ruptured, naturally or artificially, and their contents at least partially discharged, the head, in normal labor, more or less strongly flexed, with the chin resting upon or approximating the thorax, enters the upper strait or brim of the pelvis in a transverse position, more or less deviating toward the oblique. Thus the sub-occipito-bregmatic, or occipito-frontal diameter of the head, the one or the other, according as flexion is more or less complete, corresponds with the transverse or oblique diameter of the superior strait. There are commonly reckoned four primary positions which the head is wont to assume upon entering the brim of the pelvis. First, the left occipito-anterior; second, the right occipito-anterior; third, the right occipito-posterior, and fourth, the left occipito-posterior. These are sometimes abbreviated as follows: L. O. A., R. O. A., R. O. P., L. O. P.

By far the most frequently, the occiput of the child is turned to the left side of the mother, and directed obliquely forward toward the left acetabulum. The forehead then points to the right sacro-iliac synchondrosis.

When the womb has discharged its fluid contents, its expulsive power is concentrated upon the child. Its fibres in all directions contract with redoubled energy. The upper part of the fœtus, that is, in the vast majority of cases, the breech, receives its propulsive force which is communicated through the spinal column, and indeed through all the solid structures in continuity, to the head or part in advance, which, if not prevented by some obstruction, descends toward the inferior strait or lower outlet of the pelvis. In the progress of descent, flexion usually becomes more and more complete. But the head does not generally retain its position as above described, upon entering the brim of the pelvis, throughout its whole descent.

It is a well known law in mechanics, that a solid body acted upon by a propelling force, and free to obey its impulse, moves in the direction of the force applied, and if it meet with partial resistance, turns in the direction of least resistance. As a corollary to this law, it may also be stated, that a solid body whose diameters differ in length, passing through a channel or aperture whose diameters also differ, under the influence of an *intermitting* force, tends to assume such a position that its longest diameter shall correspond to the longest diameter of the channel or aperture, provided it cannot easily pass without such accommodation. A familiar illustration of this will be found in drawing a harness line with a large buckle attached to the end, by means of a jerking movement, through a terret, one of whose diameters may have been lengthened and another shortened by compression. The buckle may at first bring its long diameter to correspond with the short diameter of the terret and cannot pass, but continuously acted upon by an intermittent, jerking force, it will finally bring its long diameter in accord with the long diameter of the terret, and, unless there be still a disparity, pass through it.

As the head descends, through the propelling force of the womb, it does not, as we have said, generally maintain its transverse or oblique position; for the diameters of the pelvis change their relative lengths—so that on the plane of the cavity the antero-posterior is longer than the transverse, which latter diminishes as we descend. Hence the head, in attempting to descend in the position first assumed, meets with resistance, from the narrowing of the transverse space, and therefore, according to the principle just stated, and the illustration above given, turns in accommodation to the changed diameters of the pelvis, so as to bring its long diameter into accord with the long diameter of the part of the pelvis it now occupies. This law controls the movements of the head throughout its whole descent, until its exit is effected at the outlet, and the consequence is that the occiput, rotating from left to right or from right to left, according to the original position, finally becomes stationary under, or nearly under the symphysis pubis. It need hardly be said that the *intermittent* action of the womb

is best suited to cause the rotation of the head as above described; having an effect upon it similar to that of the jerking force upon the buckle in the illustration above given.

If the head be much compressed and elongated, or, as it is commonly called, "wire drawn," the vertex will be driven beyond the os pubis, the head still being flexed, and resting upon that bone by the sub-occipital space. If otherwise the head, in its passage downward, has still retained nearly its normal shape, the occiput having turned under the symphysis pubis, or nearly so, becomes fixed there before it emerges. This point becoming for the time stationary, and the action of the womb still continuing, even with increasing vigor, its force is now reflected upon the forepart of the head, which is consequently driven down upon the perineum, forcibly distending its tissues, which yield more readily forward in the region of the posterior commissure, than backward toward the anus, where they are thicker and more muscular. The forehead, therefore, moving in the direction of least resistance, traverses the more unyielding structures of the perineum toward the more relaxed, that is toward the outlet. While the occiput remains stationary, near or underneath the pubic arch, it will be readily seen that the forehead is the only part capable of motion, and moving around a point as it necessarily must, viz., its articulation with the atlas, its only possible motion is the movement of *extension*. The chin departs from the thorax, the forehead traverses the inner surface of the perineum, and afterward the face and the chin follow in the direction of least resistance, until the latter reaches and passes the posterior commissure. When the chin has fully emerged, it instantly falls backward toward the anus of the mother, and thus unlocks the occiput, which latter then passes under the arch of the pubis, and the whole head is born. The head, when born, if left free to move, assumes its natural position in relation to the shoulders, and this movement is commonly called *restitution*.

It is probable that after the forehead has come to press upon the perineum, an impulse may be given to the movement of extension, by the elastic force of the muscles in the posterior

part of that organ, where they are less relaxed, as it were, shelling out the head, as we force the seed out of a cherry by compression. It is moreover probable, that when the forehead comes to press upon the perineum, the middle portion of that organ lying on either side of the raphe, distending more freely than the more remote lateral regions, and, therefore, offering less resistance, may invite the forehead to turn more directly backward, and, therefore, by its leverage power, throw the occiput more directly forward under the pubic arch. This agency, I apprehend, has more to do in effecting rotation than is generally supposed, especially in the case of wide pelves or small heads, when resistance has not sooner compelled that movement to take place higher up.

The above is the usual process at the close of labor. But where the head is very small, relatively to the outlet, and the action of the womb vigorous, it may be born at once without passing through the successive stages we have detailed. Where the disproportion in size between the head and pelvis is very great, it is possible it may even descend and effect its exit without rotation, for in that case there would be little or no resistance encountered to its direct descent.

When the head has been wire-drawn in descending through the cavity of the pelvis, and the vertex protruded beyond the pubic bone of the mother, the same movement of extension takes place; but as the face sweeps over the perineum, the occiput also turns up in front of the os pubis, thereby giving more room for the completion of extension. This is a beautiful modification of the close of the process of labor, in cases where the head is so much elongated, that extension would be very difficult if necessarily executed by the movement of the forehead, or long arm of the cranial lever alone, and entirely within the limits of the pelvis.

As the head is born the shoulders are made to enter the superior straight, their long diameter corresponding with the transverse or oblique diameter of the brim of the pelvis. They descend through the cavity in a manner similar to that we have described, and upon the same principle. Rotation brings the one under the arch of the pubis and turns the other into

the hollow of the sacrum, to traverse the inner surface of the perineum, and, usually, first to pass the outlet by gliding over the posterior commissure. When the posterior shoulder is born, the fœtus bends sidewise and toward the anus of the mother, which movement relieves the other shoulder detained under the arch of the pubis, and which is now immediately born.

The descent of the shoulders, provided there be no unnatural obstruction, is much more rapid than that of the head. This is partly owing to this part of the fœtus being more yielding and more readily accommodating itself to the parturient canal which it traverses; but principally to the maternal structures being so thoroughly dilated by the passage of the head that they offer but little resistance.

When the head presents in the right occipito-anterior position—that is when the occiput is turned to the right of the symphysis pubis, and points toward the right acetabulum of the mother, it descends in a manner similar to that already described, only its rotation movement is in the opposite direction, that is from right to left. This position is, however, much less frequent than the former.

Left occipito-posterior positions are sometimes, some say frequently, converted by rotation into the left occipito-anterior, and, consequently, the occiput turns under the symphysis pubis. But this failing to occur, the occiput is thrown into the hollow of the sacrum, and the forehead is turned under the pubic arch. In this case the labor is usually considerably retarded, and requires greater expulsive force, in order to be completed by the natural powers. The occiput here instead of traversing the shorter route measured by the width of the os pubis, must pass over the curve of the sacrum and the whole extent of the inner surface of the perineum, commonly called the curve of Carus, until it emerges at the posterior commissure; and, until this takes place, extension cannot be effected, nor the head be born. The forehead, too, owing to its greater breadth, is probably arrested further up, after turning under the arch of the pubis, than the occiput would be. This would, of course, increase the difficulty. Similar remarks apply to the right occipito-posterior position.

In these occipito-posterior positions the rotation forward or backward is no doubt determined by the attendant circumstances, such as the size and peculiar shape of the foetal head, for these greatly vary, the size and shape of the pelvis of the mother, for these differ considerably even within the limits of deformity, and the strength and direction of the uterine force. These circumstances all tend to modify the resistance met with by the descending part, and therefore also its movement of descent. In such cases it is better to leave the head to follow its own course without using at least any violence to divert its movement. The moving part will follow the direction of least resistance, and in doing so cannot go very far wrong. If the powers of the mother are likely to prove inadequate, we have the forceps and ought to use them.

The same principles apply to other presentations of the foetus as well as that of the head. The breech, for instance, enters the superior strait, the long diameter of the presenting part corresponding with the long diameter of the brim of the pelvis of the mother. As it descends rotation takes place as we have already seen, till at the inferior strait one hip of the child is brought under the arch of the pubis and the other thrown into the hollow of the sacrum. The pelvis of the foetus passes the lower strait in a manner similar to that described in the passage of the shoulders in cases of presentations of the head, while the behavior of the shoulders when they arrive at the outlet is similar to that detailed when they follow the head, only of course in a reversed order. Even transverse presentations of the foetus are subject to the same law. Here, too, the long diameter of the child seeks to accommodate itself to the long diameter of the pelvis of the mother, but even this done, in such unfortunate cases extrusion cannot take place, unless it be when the foetus is very small or the pelvis very large, or both these circumstances coincident. In such cases the child sometimes passes doubled. But this so rarely happens that it can hardly be hoped for in any given case.

In the presentation of the arm and shoulders it occasionally happens that, through the powerful but intermitting action of

the womb upon the fœtus, whose parts are still to some extent free to obey its impulses, the shoulder and arm ascend while the head comes down to occupy their place, and one of the most unfortunate presentations is converted into the simplest one, namely that of the head. But this too, rarely takes place, except through manual interference such as will be described in another place.

If the head in descending, owing either to its size or peculiar conformation, or to the smallness or irregular outline of the pelvic canal, does not find space to evade the obstruction with which it meets, by moving off in the direction of least resistance, it becomes locked and does not move at all. It can no longer obey the propelling force, and the process of parturition ceases. The action of the womb may continue, its energy may for a time even be increased, but there is no advance, because the presenting part can no longer obey the law already indicated, and the womb itself at last, wearied out and as it were discouraged, becomes quiescent. In this state of things without a resort to the resources of art, the life of both mother and child must inevitably be sacrificed.

In speaking of the propelling force by which the fœtus is made to descend, we have noticed that only which has its origin in the womb itself. But this, although powerful, is not the sum of the forces employed. The abdominal muscles in the last stage of labor, also furnish their part and that no inconsiderable one, a circumstance to which we have already adverted in the preceding chapter wherein we have noticed the phenomena of labor. Their action has generally been considered as under the control of the will, and so it is to some extent, but not wholly so. They are subject to reflex influence as well as the involuntary muscles. This is seen in the woman's inability to resist the inclination to bear down, even when most urgently exhorted to refrain, and also from the fact that their activity is generally but little impaired when the patient is in a state of deep anæsthesia.

If we have correctly stated the law controlling the descent of the presenting part of the fœtus, especially of the head, it will be seen that absolute uniformity in its movement in all

cases is not to be expected. The great diversity that exists in the shape and size of the foetal head, as well as in other presenting parts, though in a less degree, will greatly modify the character of the resistances encountered, and therefore the movement of descent. The same is true as before intimated, with regard to the varying shape and size of the maternal pelvis.

It is not therefore surprising that reputable authors have differed in their views as to the precise movements of the descending head, and that each, founding his opinion upon his own observation, should be very positive as to its correctness. These opinions may indeed considerably vary and yet be founded upon and consistent with correct observation. The possible diversity however which follows as a corollary from the law which we have just enunciated should teach us, that while we may be very positive as to an individual case, or indeed many cases in our own practice, we should not dogmatically insist upon all others being wrong who differ from us.

Before closing this chapter it may not be out of place to remark that the movements of the presenting part, to accommodate its diameter in its descent to those of the pelvis, are greatly facilitated by the lubrication of the internal surface or the parturient canal for which nature has so bountifully provided.

CHAPTER VI.

MANAGEMENT OF LABOR.

Before entering upon the discussion of what properly belongs under this head, I would premise that I have been in the habit for many years, when my services were engaged some time previous to the occurrence of labor, to request the patient to take

thrice daily, for ten days or two weeks previous to the expected confinement, a dose of the tincture of *Act. rac.*, or if much troubled with uterine pains, apparently of a rheumatic character, *Cauloph.*, in alternation with the above. In the latter case two doses of each may be taken every day. The doses I have preferred, are five drops of the mother tincture or ten of the first decimal. If the patient suffer from very severe pain, resembling dysmenorrhœa, perhaps *Viburn. opul.*, or *Viburn. prun.*, or *Xanth. frax.* might give relief. This preliminary treatment is specially applicable in the cases of primiparæ and of those whose first stage of labor is usually protracted through rigidity of the os uteri. That this measure shortens this stage, I think I have no reason to doubt, having frequently tried it with almost unvarying results. I have detected a difference of one to several hours in the same woman, according as the medicine was given or not given, and I could not discover any circumstance in these cases to account for this disparity, without assigning it to the action of the drug.

When we know that the patient usually has rapid labors, this preliminary treatment should be omitted, as it is not required, and may be productive of bad consequences. But even in this class of cases, if the patient usually suffer much from extremely acute pain in the preliminary stage, the *Act. rac.* may do good, by relaxing the soft structures, and thereby disposing them to yield with less suffering.

Where we have, previous to labor, made out, or even suspected a mal-position of the fœtus, we are advised by Mercy B. Jackson, to give *Pulsat.*²⁰⁰, with the assurance that it will, at least in many cases, avail to correct the abnormality. Of the efficacy of this expedient I am unable, from any experience of my own, to say anything for or against it. According to Credé and others, mal-positions are frequently corrected by the natural powers. Indeed I have often thought that the pains experienced in the region of the womb some time before labor, were not unfrequently caused by an effort of that organ for the proper adjustment of its contents. There is no position of the fœtus so well adapted to the shape of the cavity wherein it is contained, as that with the head downward and the back

turned toward the abdominal walls of the mother. Any deviation from this position, we may suppose, creates more or less uneasiness, and by reflex action excites the efforts of the womb to correct it. We would, however, advise the faithful trial of the Pulsat. treatment, for, strange as the result claimed may seem, it can, at least so far as we can see, do no harm.* It is of the utmost importance, however, if we are apprized of a mal-position previously, to see the patient as soon as labor sets in, and, at the proper moment, to make an effort, by the bimanual method, to correct the unfavorable presentation.

One of the first duties of the accoucheur is to hold himself, as far as possible, in readiness to obey promptly the calls that may be made upon him to attend cases of confinement. Patients very often engage the services of their chosen attendant, some time beforehand, in order that he may "keep at home" when he is likely to be needed. To be always found at home is, of course, an impossibility with the busy practitioner. It is, however, generally in his power so to arrange his business that the least possible time may be spent in finding him, and to have all appliances he is likely to need, so far within his reach as to put them up for transportation in a few moments. To be promptly at the bedside of the patient, is not only gratifying to her, but often of importance in the further management of the case. In first labors there is generally considerable lapse of time before the physician is really needed, but it is better to be several hours too soon than one too late.

Arrived at the house of the patient, it is not generally necessary he should at once rush into her presence. On the contrary, unless urgently requested to enter her apartment immediately, he had better seat himself in another room, until he becomes cool, if in hot weather, or warm, if in cold, and in either case until he regains his composure, if that has been disconcerted. The attendant should never approach the bed-

* Since writing the above I tried the Pulsat. in a case where I thought I detected the head high up upon the left side, about three weeks before confinement. When labor set in I found the head so nearly above the upper strait that I easily brought it there.

side of his patient in an excited, flurried manner. He should manifest all the calmness and composure he would do were he about to engage in one of the most ordinary transactions of life. Nothing is more likely to upset the confidence of the patient or destroy her equanimity and excite her apprehensions, than to see her attendant approach her in a state of perturbation and anxiety. She naturally infers that either he is distrustful of his ability or that he sees something in her case, unknown to herself, that excites his alarm. On the contrary he should show by his countenance and demeanor that he feels himself to be master of the situation.

When he is invited, let him quietly, but in a sufficiently dignified manner, enter the lying-in room. After some general conversation with his patient, and when both begin to feel easy in each other's presence, he may inquire how long she has been suffering pain, ascertain the particular character and frequency of the pains, examine her pulse, inquire into her previous health, if this be not already known—ascertain the condition of the bowels, whether or not they have been recently and freely evacuated, etc. If there be any doubt, he may inquire whether the membranes have ruptured or not; but this may generally be inferred from the character of the pains and other apparent circumstances.

If the pains be still distant from each other, mostly in the back, at least not of the bearing down character, he may leave the patient to herself, without further interference for the present. It will be well, however, to ascertain from the nurse or some one in the room, what arrangements have been made as to the bed and the patient's dress, as these are matters of no small importance. As to the former, the best plan is probably to lay a piece of oil-cloth or a gum blanket upon the sheet next to the mattress, and upon this another sheet, which can be removed after delivery, if wet or soiled. The oil-cloth will prevent the discharges from passing into the mattress, and ensure dryness and comfort. With regard to the person of the patient, I have preferred to have her skirts drawn up above her hips and a folded sheet pinned around her, with the opening behind, so as to admit of easy access in making examina-

tions, etc. This can be also removed at the close of labor and the skirts drawn down. When the patient is likely to be very restless, the sheet may be an encumbrance, and therefore objectionable; but the skirts may be kept dry, in any case, by being drawn up as above directed.

If the bowels of the patient have been constipated, so that there is reason to believe the rectum is loaded with indurated fæces, it would be well, where practicable, to administer an enema of warm water, so as to procure a free evacuation. This will very considerably increase the space for the passage of the child's head. The patient should also be frequently reminded to pass her urine, so as to prevent accumulation in the bladder. To give her an opportunity so to do, I need hardly say the attendant should, for the time, retire from the room.

When the pains begin to increase in severity, and especially if they assume a bearing down character, the accoucheur should propose to his patient the propriety of making a vaginal examination. This, when properly proposed, is very seldom refused. If, however, any reluctance be expressed by the patient, which occasionally happens, especially with primiparæ, he should explain to her his object and the importance of the operation, at the same time assuring her that it is not likely to give her any additional suffering, while it may contribute much to her safety as well as that of her expected offspring. When her consent is obtained, the attendant places her upon the left side near the edge of the bed, with her knees drawn up, so that her thighs are about at right angles with her body. He then washes his hands in quite warm water with soap, smears the index and middle finger of the *left* hand with lard containing no salt, or with olive oil, and takes his position behind the patient to await the approach of a pain. When he observes her begin again to writhe, he carries his hand up under the bedclothes until his fingers impinge upon the perineum, thence carried forward he detects the genital fissure. One or both fingers (I much prefer one) is gently insinuated and carried up *its whole length* following the axis of the vagina. In so doing it is somewhat curved forward, and in making an

exploration at this height, the palmar surface of the point will generally impinge upon the os uteri. This will probably be found somewhat dilated—perhaps to the size of a quarter dollar, perhaps even more or it may be less. The os is sometimes fully dilated, or nearly so, at the first examination. The young practitioner should never satisfy himself that he has made an examination at all, until he is certain that he has found the os; nor should he withdraw his finger until he has thoroughly explored that organ and made himself fully acquainted with its degree of dilatation, and its condition as to thickness of its edges, suppleness, etc. If the os be situated so high up that we cannot reach it with the point of the index finger, if that be of ordinary length, we have great reason to doubt whether labor has set in. I have, however, met with a few cases where I could not touch the os at first, but it nevertheless came fully within reach as the labor advanced. When the fœtus lies transversely, the os may not at first be within reach of the finger, although labor may have set in. Again, if the os have in no degree dilated, and the neck of the womb surrounding it, can be felt, that is, is not yet obliterated, we may be pretty certain labor has not yet begun. The pains are probably of a rheumatic or neuralgic character, and should be treated accordingly. Caulophyllin, Ergot, Acetate of Morphia, Ignatia or Atropine, 3d decimal, one or the other, according to indications, may serve to relieve them, and permit the attendant to go home and take his rest.

The presenting or lowest part of the fœtus may mostly be ascertained at a first examination. But if the os be imperfectly dilated and the membranes still entire, we are often unable to determine the position. This, however, will generally be made out in the course of the labor by repeated examinations.

As we are now speaking of the management of the simplest form of normal labor, we assume that the head presents. Of this we may assure ourselves by its shape and solidity. No other part offers such unyielding resistance to the touch, and none is so spherical in its contour. The fontanelles and sutures, when felt, also assist very materially in the diagnosis.

When the breech presents and the finger impinges upon the sacrum of the fœtus, it may possibly be at first mistaken for the head, but it lacks its sphericity and smoothness, and other parts are at the same time felt incompatible with a cranial presentation.

When we have satisfied ourselves that the presentation is a normal one, and that there is no obstacle to the further progress of the labor, we have only to wait patiently for the natural powers to complete the process thus favorably initiated; but, at the same time, we must be intently vigilant, so as to discover at once the occurrence of any symptom requiring our interference. Examinations need not be very frequently repeated, as they more or less annoy the patient; and when the os uteri is found progressively to dilate, to become softer and more distensible, while the pains are recurring at regular and gradually shorter intervals, we may be assured that all is advancing favorably. When the membranes protrude or grow tense at the occurrence of each succeeding pain, and the os is dilated to a diameter of three inches or nearly, but they still do not rupture, it is better to discharge the waters by artificial means. Much unnecessary suffering is often saved by this expedient. The membranes are sometimes of unusual toughness, and refuse to yield to the normal contractions of the womb. In such cases this organ becomes, as it were, exasperated and takes on unwonted energy, at the expense of great suffering and exhaustion of the patient. Besides, the head does not usually descend until the waters are evacuated. This measure, too, sometimes becomes necessary when the amniotic fluid exists in greater quantity than ordinary, and so distends the womb that it cannot efficiently contract to expel its contents. In such cases its action will usually become much more energetic when the fluid is evacuated.

To rupture the membranes, various expedients are resorted to. Some effect the object with the finger nail; but this requires it to be long, and we should not attempt to handle these delicate structures unless our nails be pared short and smooth at the ends. A much better plan is the following. A porcupine quill, probe or knitting-needle is provided and laid

within reach. At the commencement of a pain the forefinger of the left hand is introduced and carried up until it impinges upon the distended sac. We must be sure that it is the sac we feel. This may be known by its smoothness and elasticity, and by its becoming more tense during each uterine contraction. Seizing the moment of its greatest tension, the point of the selected instrument is carried up in *close* contact with the palmar surface of the inserted finger until it impinges upon the membrane. It is then gently pressed with a kind of scraping or dragging movement until it penetrates the sac, which is felt by the hand which operates, as well as ascertained by the gush of water upon the inserted finger.

If the pelvis be well formed, the uterine contractions energetic, and there be no preventing cause on the part of the fœtus, the head will generally begin to enter the superior strait and descend into the cavity, soon after the membranes are ruptured. Indeed, in some cases, but a very few throes, after this occurrence, are necessary to effect the birth of the child. This is, however, unfortunately not always the case. The young practitioner must not, therefore, be discouraged if the descent be slow.

While the head is descending the attendant should carefully watch its progress. This cannot be too urgently enjoined, for in the latter stage of labor the descent is sometimes unexpectedly rapid, especially in multiparæ, or when the child is small. He will find, as he makes successive examinations, that its situation still becomes lower and lower. The bones of the cranium overlap each other at the sutures, to a greater or less extent, according to the greater or less degree of tightness with which the head traverses the parturient canal. Unless there be abundant space it will also become elongated or wiredrawn. This will sometimes take place to such extent, that at birth it is thought by the inexperienced bystanders to be a deformity, and they can hardly conceive how soon, under proper management, it will entirely disappear.

When the occiput turns under the arch of the pubis, it is sometimes well to place the point of the index finger of the right hand upon it, and by firm but gentle pressure force the

head somewhat backward, toward the sacrum of the mother, holding it for a few moments in that position. This manœuvre, generally of easy execution, permits the fluid that may still be ponded up above the head, to escape, and thus enables the womb to concentrate its force more directly upon the fœtus.

When the head begins to distend the perineum, especially if the pains be very active, it becomes the practitioner to be on the alert. He should carefully watch the dilatation of that organ, and by carefully inserting his finger, in the absence of a pain, between it and the cranium, carefully estimate the degree of its distensibility. If rigid, and the pains be still increasing in violence, there may be danger of serious rupture. To aid in preventing so formidable an accident, he should, contrary to the general advice of bystanders, exhort the woman *not to bear down*, so far as possible to bring her will to aid in holding in check the energies of the womb—an exhortation I admit not always easily obeyed, and seldom of much avail. But some women have more control of themselves through a strong will than others, and the expedient here advised may at least prevent them calling to their aid the powers of the voluntary muscles. In first labors the perineum often distends very slowly, and to a very great extent before the head is born.

Further instruction will be given for the management of cases wherein laceration of the perineum is threatened, or has actually occurred, in a future chapter devoted to that subject. It would be out of place here, where we are treating of simple, natural labor.

When the head is born we should ascertain whether the cord surrounds the neck, and if so, we should immediately remove it, by drawing it over the occiput. The head should be steadied with the left hand, while with the right we grasp the womb, through the abdominal walls, and thus stimulate it to contraction, so as to expel the other parts of the fœtus. As the shoulders and body pass, we should follow up the receding womb by firm and equable pressure downward and backward, thus aiding in the expulsion of the child, and forcing the organ to close after this is effected. This compression should be kept up for some minutes after the birth has taken place.

If, however, a reliable assistant, as a well-trained nurse, be present, it is better to instruct her how to perform this latter duty, and leave the accoucheur the use of both his hands for other purposes.

If the extrusion of the shoulders and the trunk do not soon follow that of the head, and especially if the womb, exhausted by the work already accomplished, seems unable to rally to complete its task, we should render such manual assistance as may be necessary to supply the deficiency of the natural powers. This is done most efficiently by hooking a finger in the axilla of the shoulder which has turned or which will turn toward the sacrum, and by gentle extractive force drawing it downward in the axis of that part of the passage in which it is found, until it passes the posterior commissure, when the other will soon follow underneath the pubis. If this aid be found necessary, an assistant should apply external pressure upon the womb, following it up as the body of the child recedes.

If the head has been much compressed during its passage, there will be found at birth, a soft tumor upon that part which had been in advance during the descent. This need give no concern, as it always entirely disappears in a short time. Perhaps its disappearance may be hastened by the application of a little Arnica. These tumors have been called, according to their supposed contents: *caput succedaneum*, *sanguineous tumor*, or *cephalhæmatoma*.

When the child is wholly born and has cried, it is fitted for a separate independent existence. The finger should be immediately swept through its mouth to remove any mucus that may be between its lips or lodged in the upper part of the throat. The next duty of the accoucheur is to separate it from the mother. The instructions formerly given upon this subject were quite uniform and simple. We were directed to seize the cord near the umbilicus with the thumb and forefinger of the left hand, strip it up toward the placental end, so as to empty it of blood, to a distance of about three fingers' breadth from the abdomen of the child. At this point a ligature of linen braid or other material was tightly applied with the right hand, and tied with the usual simple knot. About an inch

further on, toward the placenta, another ligature was in like manner thrown around the cord, which was then severed with a pair of scissors midway between them. The child was wrapped in a warm flannel cloth and turned over to the care of the nurse.

Of late several modifications of the management just detailed have been proposed. Some advise that we should not remove the child from the mother till the cord has entirely ceased to pulsate. This practice, however, would sometimes entail very inconvenient delay, as the pulsation will often keep up for a considerable time. The advantage too, secured by this delay, may be only imaginary. At least we have seen no evils follow the almost immediate removal of the child when it is vigorous, and respiration is fully established.

We admit, however, that this is a question not to be disposed of in a flippant manner. At a meeting of the Society of Biology, of Paris, held December 11th, 1875, Dr. Budin communicated a paper in which he maintained that the cord should not be severed till one or two minutes after it has ceased to pulsate. From repeated observations he had made, he concluded that the blood received by the infant through the placenta during that space, furnishes the extra supply required to fill the pulmonary circulation just being established. By this delay, moreover, he contended that the placenta is exhausted, rendered flaccid, and consequently more easily delivered.

Again, we are told we should not ligate the cord at all—that the pent-up blood produces infantile colic and jaundice. For ourselves we have not been much troubled with the colic of infants, although we have followed the practice of ligating, with but one exception up to the present time. Our cases of colic have been generally traceable to the ignorance of the nurse, in giving the child immediately after birth some of the panada destined for the mother, or later, to the peculiar quality of the milk. As to infantile jaundice, it is probably owing to quite another cause. Unless some very great advantages were gained by leaving the cord untied, the practice is certainly censurable on account of the risk of hæmorrhage. Whatever may be said to the contrary this risk certainly does exist, unless in

all cases we wait till pulsation *entirely* ceases before the separation of the child, and we are by no means certain that even then it does not threaten us. It is to no purpose to plead the case of the inferior animals. We have had abundant opportunities of witnessing the births of these so as to know that the analogy is not sufficiently close to base any practice upon it. The cord in the case of animals is separated by laceration. The larger ones, as the cow, often give birth to their young on foot, and the cord is separated by the falling weight of the fœtus; the vessels are therefore torn by overstretching, and the lacerated coats, by their resiliency, contract upon, and close their orifices. In other cases the cord is severed by the teeth of the dam, and therefore the vessels are mangled and torn as by an operation with the ecraseur.

We have never tried the experiment of omitting the ligation but in a single case. This was an unusually robust male child, and we thought a little loss of blood would do no harm, if it should occur. We watched the case however very carefully, as the condition of the mother required us to remain for some time with her. At our first examination we discovered no hæmorrhage, but at the second we found blood oozing through the cloths, and upon the removal of these, a jet spirted forth like a fountain. We have no reason to doubt had the cord in this case been left untied the hæmorrhage would have resulted in the great injury, if not the death of the child. This although but a solitary case, at least proves that the unligated cord *may* bleed, and if there be no great advantage in the practice of non-ligation, it is certainly not worth while to incur the risk or suffer the anxiety inseparably connected with it.

It sometimes happens when the child is born it does not immediately cry. This circumstance should always attract our attention. If the mother have been for some time under the influence of chloroform, it need create no alarm, for the offspring, owing to its intimate connection with the parent in intra-uterine life, will through the placental circulation be affected by the anæsthetic in the same manner as herself. In the case of the child however, as with herself, the effect soon passes off, and its behavior is as usual.

Another cause, although a very rare one, may prevent the child from crying when born. When the membranes have ruptured some distance above the mouth of the womb, or when very unusually tough and the opening small immediately over the presenting part, the evacuated membrane is carried down covering the head in the manner of a hood. The child is then said to be *born with a caul*. This accident of course prevents it from inhaling the air, and consequently it cannot cry. The membrane should be *immediately* torn and drawn off, as neglect of this will very soon cause the death of the child. The inferior animals, as the mare, very promptly attend to their offspring when this accident occurs. The effort to breathe produces a peculiar sound which attracts the attention of the dam, and she immediately removes the membrane with her lips or teeth. This I have *seen* her do.

But the child may be, from various causes, born more or less asphyxiated. The countenance is livid, from stagnation of blood in the capillaries of the face, and often all signs of life are absent. This is sometimes owing to long continued pressure of the head in the last stage of labor, and sometimes to the other parts being too long retained after the head is born, causing compression of the cord. But from whatever cause, it demands our prompt attention and whatever methods of resuscitation may be adopted, we should persevere in them until we completely accomplish our purpose or until we are convinced beyond a doubt that life is extinct. It should be remembered, however, that our efforts if persisted in will sometimes be crowned with ultimate success when for a long while they seemed utterly unavailing. The first sign of returning animation is usually a kind of sobbing effort to breathe, always encouraging.

As soon as the child has been satisfactorily disposed of, the mother again demands our attention. The placenta with its adherent membranes, commonly called the secundines or after-birth, has probably not yet been extruded. The proper management of the delivery of the after-birth is one of the most important duties of the accoucheur. There is no point in the conduct of labor where a serious error is more likely to be fol-

lowed by disastrous consequences to the patient or discredit to the attendant.

Where a well instructed assistant has applied the hand over the uterus and followed up its receding walls as the body of the child is being expelled, the hand thus applied should retain its position, making gentle pressure till the attendant is ready to complete the delivery.

The question how long should we wait for the removal of the after-birth has not been definitely settled, nor can it be. The time must necessarily vary according to varying circumstances. When there is nothing requiring immediate action, such as present or threatening hæmorrhage, it is best to let the patient enjoy a few minutes rest, so as partially to recover from her exhaustion. The womb, fatigued from its former efforts, is not immediately disposed to second our attempts. By a little delay we give time for the blood to coagulate within the uterine sinuses, thus affording greater security against flooding, while that already extravasated within the uterine cavity is permitted to form clots, and may thereby be more readily extruded along with the other contents.

Our delay, however, should not be too protracted, otherwise the parts may contract to such an extent as to greatly increase the difficulty to the operator and pain to the patient. Fifteen or twenty minutes is a space ordinarily sufficiently long, often it may be considerably shorter.

The method of delivering the after-birth has greatly varied at different times and in the hands of different practitioners, and as yet there is no one universally agreed upon as the best. Dr. Churchill, whose work on Midwifery has been very justly held in high estimation, gives us the following advice: "When the binder is applied the patient may be allowed to rest awhile, if there is no flooding, after which, *when the uterus contracts*, gentle traction may be made by the funis to ascertain if the placenta be detached. If so, and especially if it be in the vagina, it may be removed by continuing the traction steadily in the axis of the upper outlet at first, at the same time making pressure upon the uterus." This is the method probably still practiced by a majority of accoucheurs, if not in

the United States, at least in England. It is certainly open to many objections, and amongst them a very prominent one is its great liability to abuse. Inexperienced practitioners are apt to make injurious traction upon the cord when they fail to succeed by gentle force. Velpeau tells us of the case of a student who by a misdirected and too violent force had failed to accomplish his purpose, and had separated the cord from the placenta. We often meet with similar accidents in cases which have been attended by ignorant midwives.

The method termed "Expression of the Placenta" seems to be growing into favor both in this country and upon the continent of Europe. Although foreshadowed by the Dublin School of Obstetrics, the credit of bringing it prominently before the profession is given to Credé and other German writers. It consists in applying to the delivery of the after-birth a "vis a tergo" instead of, as formerly, a "vis a fronte."

Dr. Playfair, a late British author, who is very enthusiastic in favor of this method, gives us the following directions for its successful performance. He advises an interval of fifteen or twenty minutes before interference, during which the attendant should sit by the bedside with his hand upon the womb, but not kneading or forcibly compressing it. "When we judge that sufficient time has elapsed, we may proceed to effect expulsion. For this purpose the fundus should be grasped in the hollow of the left hand, the ulnar edge of the hand being well pressed down behind the fundus, and *when the uterus is felt to harden*, strong and firm pressure should be made downwards and backwards in the axis of the pelvic brim. If this manœuvre be properly carried out and sufficiently firm pressure made, in almost every case the uterus may be made to expel the placenta into the bed along with any coagula that may be in its cavity. If we do not succeed at the first effort, which is rarely the case if extrusion be not attempted too soon after the birth of the child, we may wait until another contraction takes place and then reapply the pressure. I repeat, that after a little practice, the placenta may be entirely expelled in this way, in nineteen cases out of twenty, without even touching the cord, and the bugbear of retained placenta will cease to be a source of dread."

However successful this method may generally be, we will sometimes find patients whose abdominal walls are so exquisitely tender that they would scarcely bear the requisite amount of pressure without extreme suffering. There are others again, in whose cases the placenta is, almost immediately after the birth of the child, extruded from the womb and lodged almost entirely in the vagina, where the former organ could no longer exercise force upon it sufficient for its expulsion.

Upon the whole, I would prefer to regard each case according to its own peculiar exigencies, and adopt such method as experience and common sense would suggest as best suited. After waiting an interval, such as above indicated—longer or shorter, according to existing circumstances, I introduce all the fingers of the *left* hand, well oiled, into the vagina, in the gentlest manner possible, and generally without causing much pain. If the placenta be found lying loose in that canal, I remove it by compressing it with all the fingers, the points being applied around its edges, so that it readily follows, or rather accompanies the hand when withdrawn. If it be still within the womb, I endeavor to ascertain, by gentle manipulation with the left hand upon the cord, whether it be detached or not. If detached, I endeavor to stimulate the womb to contraction by pressure with the right hand, applied externally. When it is felt to contract, I apply a stronger force with the right hand downward and backward, and, as the placenta is extruded from the uterus, receive it with the fingers of the left hand, and withdraw it as before described.

By whatever method the placenta may be delivered, great care should be taken to prevent the membranes from tearing, so as to become separated from it, and be left behind in the womb. The best method to prevent this, is to twist them into a cord as we remove the after-birth.

When the placenta is found to be as yet undetached, we should desist from further attempts at removal, give a dose of Puls., and wait until we think proper to make another effort. We will mostly find, if not *adherent*, that it can be removed with surprising ease upon a second trial.

It sometimes happens that owing to inertia of the womb, the after-birth remains undetached from its surface, even where there is no *morbid* adhesion, longer than we think advisable to wait upon its extrusion. Perhaps, in these cases, Ergot might generally procure its detachment and expulsion; but we do not advise its use, because it may, if given in any considerable quantity, produce irregular contractions, and increase the difficulty it was intended to remedy.

Abnormal adhesions of the placenta will be elsewhere treated of as one of the accidents occasionally accompanying childbirth. But where we think best not to wait longer upon the powers of nature, we should gently introduce the hand into the womb, guided by the cord, and having found the site of the placenta, ascertain if any portion of the margin be detached. If so, we insert the fingers between the detached portion and the surface of the womb, and by a waving, side to side movement of the fingers held together, peel off the still adherent portion of the placenta until the whole is detached, and then carefully inclosing it in the hand, bring away the whole mass. Where the adherance is very slight, it may be broken up by spreading the finger tips around the borders of the placenta and, as it were, gathering it toward the centre. When thus detached it is already wholly in the hand and ready for extraction.

If no portion of the margin be found detached, we can separate it at such spot as it may seem least firmly adherent, or where the manipulation may seem the most easy of execution.

I would here say and may think proper even to repeat in other places, that in all operations within the womb, the unemployed hand should be applied externally and firmly support that organ, or aid, in any practicable manner, the object in view.

When the after-birth is removed, the cloths that may have been placed under the patient, to receive the discharges, should be taken away, with all the blood and, as far as possible, wet of every kind. Where these cannot be wholly removed, contact with the patient's body may be prevented by interposing dry and warm skirts or such other material as may be at hand.

It has been usually customary to apply a binder around the lower part of the body, with the object to support the womb and the relaxed abdominal muscles. It has been supposed that this also tends to preserve the symmetry of the woman and prevent what has been called pendulous belly. Of late, however, the propriety of this measure has been called in question, and it has even been charged with causing the very evils it was intended to prevent. Some physicians have, therefore, entirely discarded the binder, preferring, in all cases, to dispense with its use. This is probably going to an unwarrantable extreme. Most women think the support of the binder contributes greatly to their comfort. When this is the case, they ought to be indulged in the use of it, unless there be manifest counter-indications; for, if judiciously applied, the supposed evil consequences are doubtless imaginary. At least we have never seen them, and if they have any real existence, one would suppose they would sometimes appear. I admit the binder may be applied so as to do more harm than good; but the evils of the abuse, which may be always avoided, should not be charged to the proper use. I have, however, myself often omitted this appliance where I supposed it unnecessary; and thus far I have had no reason to regret the omission. Where it seems to be a matter of indifference, I commonly leave to the patient to take her choice.

Women of strong elastic muscular fibre, will do very well without any abdominal or uterine support; but those of feeble constitution and relaxed muscles will, no doubt, feel the better to have a binder well applied; but we should always be well assured that the womb is fully and permanently contracted before its application. If we use this appliance, a simple towel, well spread and tightly drawn around the body, extending from the hips upward to near the ensiform cartilage, and securely fastened with pins, will be the best arrangement, at least for the first few days after childbirth. The nurse should be instructed to have a constant care that it retains its place as at first applied, and it may be, from time to time, slightly tightened, as the womb and abdominal muscles regain their normal condition. Where we suspect the occurrence of

uterine relaxation and probably consequent hæmorrhage, it will be well to place a compress under the binder, over the region of the womb.

The patient may mostly be allowed to wear the binder for a longer or shorter time, pretty much according to her own inclination; it must be admitted, however, that if too long worn, there is danger of causing atrophy of the abdominal muscles. Dr. Goodell recommends its removal after the first few hours, an advice which I have no doubt it would be well to follow, except in cases where there are special reasons to adopt a different course.

When there is not an absolute necessity requiring the attendant to leave, he should remain with the patient at least for an hour after the birth of the child. Before his departure he should ascertain the condition of the pulse, whether the womb still maintains its contraction, or whether, as sometimes happens, it has again become relaxed—whether there be any indications of threatening hæmorrhage—and this may be pretty confidently expected if the pulse be very quick—say up to 100° or nearly—the patient restless, and the womb relaxed or imperfectly contracted. The womb should be felt hard and round like the fœtal head, and just above the pubic bone.—He should enjoin upon the patient the importance of attempting to evacuate the bladder within two or three hours after delivery, and this altogether irrespective of her inclination; for, owing to the relaxed condition of the abdominal tissues, she may be insensible of her need until great distension has taken place. In order to pass her urine, if she be very weak, or if there be any indications of threatening hæmorrhage, she should be raised as little as possible from the horizontal position. Some women cannot evacuate the bladder, at least immediately after delivery, unless they are taken up; and it has been recommended to seat them upon a chair, to encourage the expulsion of clots. This expedient may be useful, and from experience we would earnestly advise it, if the patient suffer pain, apparently from the presence of clots, and if she be sufficiently strong. On the other hand, if she be very much exhausted, or there be reason to apprehend flooding, it will be

better to use the catheter at once. This should be done in all cases, when several ineffectual attempts to pass water have been made, and before painful distension has taken place. Tincture of Ergot has been recommended, as a substitute for the catheter, in the retention of urine in the case of the lying-in woman. Twenty drops every half hour, according to Allopathic advice. I have given ten drops with apparently good results; but, as this is a powerful drug, if no less quantity will answer, and I am not sure that it will not, we had better, perhaps, at once resort to the catheter, which we know to be harmless. Ergot, however, according to some published observations, is probably homœopathic to the retention of urine.

The nurse should be admonished to examine the child occasionally, to see that there be no hæmorrhage from the cord, for this sometimes happens, although a ligature may at first have been well applied. When the cord is unusually thick and gelatinous, it becomes flaccid and shrinks, the ligature loosens and hæmorrhage may supervene.

The patient usually requires some additional clothing to be laid over her shortly after the termination of labor. She is often bathed in perspiration, and when the excitement is over, and she suffers from the exhaustion and shock, consequent upon preceding efforts, she is liable to chill. Indeed she will often experience a tremor of her whole frame, which is not, properly speaking, a chill, but altogether of a nervous character.

But, on the other hand, we must carefully guard against too much clothing, as this will invite hæmorrhage and tends unduly to excite perspiration. The patient should be kept simply comfortable, neither too warm, nor too cool. The accoucheur should scrupulously see to all these things before leaving the house. Especially should he make arrangements for the *free* but *safe* ventilation of the apartment. Before his departure he should have an express understanding that he is immediately to be notified in case any untoward symptoms manifest themselves.

When the accoucheur has completed his duties in the delivery of the woman and the proper disposal of the child, he

should in no instance abandon the case without further attention. If he have left his patient doing well so far as can be seen, it may be sufficient to visit her again in twenty-four hours. If, however, she had manifested before his departure any suspicious symptoms, he should see her in a much shorter time. Her safety depends much upon his vigilance, upon his early detecting any departure from normal convalescence, and his promptly resorting to suitable remedies. He cannot wholly depend upon the information which has been promised him, in case anything seem to be going wrong, for the nurse or friends may not be able to interpret unfavorable symptoms, or may think, what they suppose to be a trifling matter, will in due time correct itself; and too often they themselves undertake to prescribe.

At his first visit after delivery he should carefully inquire after the general condition of the patient. Her countenance upon his first entering the room will give him pretty reliable information upon this point, if he be capable of reading it. If she tell him with a smiling face and natural aspect that she is "doing very well," he has not much reason to doubt her word—but not to be deceived, he must see that present symptoms do not contradict her assertions. He should ascertain the temperature, frequency and character of the pulse, of the secretions, and their amount, the degree of abdominal tenderness, whether she have passed water, whether she has had any sleep—as to the bowels, we do not expect them yet to be moved, and therefore the normal condition at this period is quiescence. In leaving his further directions let the physician emphatically instruct the nurse not to give his patient *castor oil*. The bowels will often resume their action spontaneously. If not, after the fourth day a suitable remedy may be given.

What is the best position for a woman in labor is a question which has called forth much discussion and is still "sub judice"—undecided. Indeed so strong is national and individual predilection in regard to this subject that it seems almost impossible to discuss it with anything like impartiality.

In the first place, there is no position which can properly be indiscriminately adopted in all cases. The peculiar condition

of the woman, in all respects, is to be regarded in our selection, and even her whims when not incompatible with her own safety and that of her offspring, or the convenience of her attendant are not to be wholly overlooked.

During the early stage of labor, if the patient be strong and so inclined, it is better for her to remain out of bed, occasionally to stand upon her feet supported by the bed-post or to step about the room in the intervals of her pains. Women generally believe that uterine contractions are rendered more energetic by this course. Some patients however who are feeble, or very helpless from the size and weight of the womb, prefer to lie down from the beginning. When in bed it is generally best, until the pains become forcing and the head has fairly commenced its descent, to allow such change of position as may be necessary to avoid weariness. Indeed throughout the course of labor till near its close, the patient, if she desires it, may be allowed for a short time to leave her bed. As by turning from side to side the axis of the womb is somewhat altered, and therefore the direction of its force not always in accord with the axis of the parturient canal, it is a good plan to secure a suitable binder around the body. This may be a towel or bolster case, or anything else that will answer the purpose. A little ingenuity would devise a binder to tighten with straps and buckles that would answer the purpose admirably. An apparatus of this kind has been proposed, but it is too complicated and too expensive for common use.

When we wish to make examinations, if the left hand be trained as it should be, it is by far the best for the woman to lie upon the left side. Of this, however, we have spoken before. The same position I consider for many reasons vastly preferable to any other in the last throes of labor and delivery of the child. It allows the easiest possible access to the patient, and is exactly suited to manipulations with the left hand. It is, so far as I have observed, more agreeable to the patient than any other position *in bed*.

In France the parturient woman is placed upon her back, and by way of imitation, the same practice seems to be grow-

ing into favor with some in this country. To say nothing of its immodesty, I cannot see any advantage it possesses over that upon the left side, and it is certainly a much more inconvenient one, unless habit alone may make it otherwise. Access to the patient is indirect, as we have to reach over the thigh and twist or bend the arm to introduce the fingers into the vagina; unless we assume a position so much face to face with her, as to be certainly offensive to any modest woman. The handling of the child, too, in the act of being born I should consider much more awkward, to say nothing of its safety.

Some women think they can "help themselves" much better standing upon the knees. It is probable that uterine action is more energetic with some in this position than when lying down. It is much more difficult, however, for the attendant to render them assistance, and, unless adroitness has been acquired through practice, to take the proper care of the child. When there are good reasons for indulging the woman in the knee position, she had better kneel upon the bed, supported by her husband or a strong nurse or assistant. If this position be adopted, the bed should be well protected by suitable covering beneath the patient. When labor is about to terminate she can be easily laid down upon the left side.

As a *temporary* change of position I have seen the following expedient answer a good purpose. An arm chair with a very wide bottom is selected. A folded quilt or cushion is laid upon the seat. The husband seats himself far back upon the chair, his limbs separated as widely as possible, his wife sits upon the front edge of the seat supported by his arm around her chest, whilst her limbs are extended and her feet are propped against some solid object.

CHAPTER VIII.

MANAGEMENT OF THE CHILD.

We have already spoken of the separation of the child from its connection with the parent, in our chapter upon the management of labor. We will now briefly notice the further attention it requires, just entered, as it has, upon an independent state of existence.

The infant should always be folded, as soon as separated from the parent, in a soft, dry, and warm flannel cloth, well enveloped and laid where it will be comfortably warm. This is particularly necessary in cold weather. It should be remembered that it experiences a great change in the temperature of the medium with which it is surrounded, when born into the world. When the child is well developed and healthy, it will sufficiently maintain its temperature with the care above directed. But if it be feeble, or born prematurely, artificial heat, as by the application of warm bottles, is absolutely necessary to its safety.

The first operation, when all is right, to which the new-born baby is subjected, is a more or less thorough ablution. This is apparently a very simple one, but yet requires great care in its performance. The child when born is usually found covered all over its body and limbs with a sebaceous substance, which it is necessary to remove. This is best done by smearing the surface with lard, and then immediately washing with warm water and castile soap. A place sufficiently warm should be chosen for the operation, and the water of such a temperature as to secure against giving the child a cold. The washing should be performed as *tenderly* and as rapidly as possible, and the whole surface quickly wiped dry, with a warm, soft, flannel cloth. We then envelope the stump of the cord in a piece of patent lint, Canton flannel, or unglazed cotton batting, turn it across the abdomen toward the left side, and apply over it the bandage or binder. It should be occasionally noticed lest it

bleed. In these days of progress some prefer to leave the cord dangling, after the manner of the brutes; for which it is claimed that it dries sooner, is less likely to become offensive, and separates more perfectly.

When the cord is disposed of, the clothes are then put on, and the little stranger made ready for presentation to the joyous mother and no less joyous father.

We have before intimated, in treating of the conduct of labor, that the child is sometimes born asphyxiated, or in a state of apparent death. We adverted to the use of means for its resuscitation, but did not particularly speak of those generally and most successfully employed. As this would there have been a digression, we have reserved a description of them for this place.

It will sometimes be found that the face has a swollen, congested appearance, is of a dark, almost purple hue; in other cases the whole surface appears exanguious, the limbs pliant, and the muscles soft and flabby. These may be regarded as different stages of the same condition, the latter, however, the further advanced, and therefore holding out less promise of success in our efforts at resuscitation. But so long as the heart pulsates, however feebly, we are encouraged to persevere. Cases are on record which have been ultimately saved, when respiratory movements were delayed even for half an hour, or in some rare cases it is said even an hour. When, however, the heart has ceased to beat, it is doubtful whether any means have ever succeeded. The heart is last to die, and when it is dead all else is dead with it. But even when we are unable to feel or hear the heart's action, we still should not despair, for in the trepidation of our unavoidable anxiety we may be deceived. By hoping against hope, and making persevering efforts, if unsuccessful, we shall at least have the consolation that we have done all that could be done.

When the face of the child is much congested, it is recommended by some to cut the umbilical cord immediately, and allow the escape of a few spoonfuls of blood. Sometimes, however, the circulation is so enfeebled, that the cord when cut does not bleed. In such cases it is recommended to plunge the

child into warm water, which usually causes the blood to flow. I may here remark that when a labor is in progress, especially near its termination, we should always enjoin upon the family to have in readiness a good supply of warm water, and the vessels necessary for its use, in any case wherein it is likely to be needed.

When we have succeeded in relieving the capillaries of their engorgement, the color of the surface changes to a more roseate hue and respiration usually sets in, feeble and irregular at first, but gradually improving in force and regularity. In all cases, but especially when the child is born in an asphyxiated condition, all mucus should be immediately removed from the mouth and upper part of the throat, by means of the finger of the accoucheur. If there be any important mechanical obstruction, the child, of course, cannot breathe.

The above method is directed principally to the relief of the capillary engorgement, which arrests circulation and prevents respiration.

"The first respiratory act," says M. Cazeaux, "is the consequence of the excitement of the medulla oblongata, produced by the impression of the temperature of the surrounding air upon the skin of the new-born child." Assuming this theory to be correct, we may suppose that in cases where respiration fails to be excited by the cause just referred to, the sensibility of this portion of the brain controlling respiratory movements may have been so much obtunded, that it does not appreciate the reflex action set up by contact of the skin with the surrounding atmosphere. A stronger impression is necessary to call its dormant power into action. Hence a very efficient method in many cases of exciting respiratory movements, is to dip the ends of the fingers into cold water, and sprinkle the child's face and body. Even in cases marked by considerable congestion, I have seen this measure followed by success.

Dr. Marshall Hall advises, after vigorous sprinkling of the face and body of the child with cold water, to immerse it immediately into a warm bath, and then wrap in warm flannels. This operation may be repeated several times, and its success is said to depend upon the rapidity with which it is executed.

Another method of exciting reflex action very worthy of trial, is to slap the child's shoulders and buttocks with the palm of the hand. Perhaps it would be better still to flagellate the thighs and shoulders, or thorax, with a wet towel, of course not so heavily nor so vigorously applied as to inflict injury. Where there is reason to suspect considerable accumulation of mucus in the air passages, Dr. Dewees advises to place the child on its belly, taking care to elevate the feet higher than the head, at the same time gently shaking it so as to clear out the trachea, and thus facilitate the introduction of air. "This," says he, "is a measure of great utility, by which I am every way persuaded that I have preserved the lives of many children."

That which is called the Sylvester method is worthy of much confidence, at least it is one I should not be disposed to neglect where some or all of the foregoing had failed to succeed. Dr. Meadows says of it: "I have tried it many times and with almost uniform success." Such high testimony in its favor would recommend an early trial rather than to leave it as a last resort. It is performed by placing the child in a sitting posture, and alternately lifting it up by its two arms and setting it down again, drawing down the arms close to the sides of the body. By this means the natural movements of respiration are more closely imitated than by any other method. I have lately tried this plan in the case of a large child, the offspring of a small primiparous mother. The breech presented, and I had some trouble with the after-coming head. The delay was inconsiderable, but the child was found asphyxiated, very relaxed, pallid, and wearing the general aspect of death. The movement above described was resorted to almost immediately, and after very few repetitions I had the satisfaction to see signs of returning animation. The experiment proved a perfect success, and the child lived and did well.

Dr. Bruce read a paper at a meeting of the Obstetrical Society of Edinburg, June 13th, 1877, wherein he very strongly recommended the direct inflation of the lungs of the asphyxiated child as the most certain means of resuscitation. This method, performed by applying the mouth of the accoucheur to that of

the child, has been recommended by writers of no very recent date. But Dr. Bruce prefers the passage of a tube, such as a female catheter, immediately into the larynx of the child and through it, to force air directly into the lungs, either by the mouth or some mechanical contrivance. For the tube, a British catheter would probably answer the purpose well. A perforation might be made in the extreme point, as less liable to be obstructed by pressure against parts with which it might come in contact, or by mucus, than the usual opening at the side of the instrument, near the termination. A gum elastic bag furnished with a stopcock, the nozzle of which would fit air tight in the end of the catheter, would probably be the best contrivance for the purpose of inflation. To introduce the tube the forefinger of the left hand of the accoucheur is passed over the tongue of the child till the point reaches the rima glottidis. This will serve as a guide and at the same time depress the tongue, so that the tube may be introduced without much difficulty. If the mouth be used for inflation, the operator should quickly inhale a much larger portion of air than he needs for the purpose of his own respiration, and quickly force it into the lungs of the child, so that it may retain as much oxygen as possible. Whatever means of inflation be used, the operation should be conducted with gentleness, lest the tender structures of the child's lungs be injured by too rapid or violent distension.

The portion of the umbilical cord left attached to the child, requires the attention of the physician until it has separated. This separation usually takes place within a week from birth. If properly dressed at first it soon dries, and usually comes away so as to leave the umbilicus in a healthy condition. Sometimes, however, it continues to hang on by a mere hardened fibre, which irritates the part and, if let alone, causes ulceration. When separation is thus prevented, we should with a pair of scissors, sever the fibre by which the desiccated cord is still attached. If there be irritation of the skin of the umbilicus, a little diluted tincture of Arnica should be applied, or if ulceration has already taken place, a pretty strong solution of nitrate of silver, by means of a feather or camel's hair

brush. A small quantity of muriate of hydrastia, dissolved in glycerine, would also be a good application.

A very obstinate form of hæmorrhage sometimes takes place from the umbilicus. To arrest this we may apply pledgets of lint moistened with a solution of perchloride, or persulphate of iron. The strength may be such as to make a strong styptic impression by contact upon the tongue. The pledgets may be made sufficiently large and firm to exert compressive force under the bandage, which will also aid in closing the bleeding vessels. Dr. Churchill advises, in very obstinate cases, to fill the depression with roasted plaster of Paris, which, by its sudden hardening, would form a plug that would press upon and close up the bleeding vessels. I would apprehend some difficulty in removing the hardened plaster, when no longer needed, and fear that by its pressure it would give rise to ulceration. I cannot, however, confidently say that there is ground for these apprehensions, never myself having had occasion to resort to the expedient.

It sometimes happens that the child does not wet its diaper for a longer time after its birth than is deemed normal. The nurse should of course attend to this; but if inexperienced, it is well to remind her of it. When there is unnatural retention of urine, it is generally relieved by placing the child in a warm bath. When there is reason to suspect that the functions of the kidneys are not duly performed, remedies should be selected to correct this defect. *Ars. alb.* and *Canthar.* may be found useful. A popular remedy is the tea of the dog-rose—of the virtues of which I can say nothing. A weak infusion of parsley root is also used by nurses, and I think with good results.

It is generally advised to put the child to the breast as soon after it is born as the strength and condition of the mother will admit. Sometimes, however, it causes so severe after-pains as to create great annoyance, or even unbearable suffering. As a general thing there is, properly speaking, not much nourishment to be derived by sucking at so early a period. The first secretion of the breasts, called colostrum, doubtless has its uses, but probably affords but little nourishment, there

being but a small amount of the essential constituents of milk therein contained. It has a purgative effect upon the child's bowels, clearing them of the accumulated secretion called meconium. This our Allopathic brethren, partly from their partiality for purgatives perhaps, consider very important. It doubtless has its uses, as it is a provision of the Creator; if no other, it at least forestalls the old-fashioned administration of senna and mauna, or castor oil, for a similar purpose. Some nurses, instead of the above nauseating drugs, administer a few teaspoonfuls of molasses and water, which, in their opinion, answers the double purpose of laxative and food.

When the child is born at full term, is well developed and healthy, it probably requires no nourishment until the secretion of milk takes place;—provided also that the mother be healthy, and that her labor has been a natural one. Under the opposite circumstances, if the child seems to demand sustenance, before that usually provided by nature is furnished, the best substitute is cow's milk, diluted somewhat with water, say two parts of the former to one of the latter. To this is usually added a small quantity of pure sugar, sufficient to give it the sweetness of breast milk. A few teaspoonfuls of this may be given at a time, but care should be taken not to overload the stomach. On the contrary it is best not to fully satisfy the appetite of the child, otherwise it will be reluctant to take the nipple when applied.

The practice of ignorant nurses of giving the newborn infant a portion of the panada or gruel destined for the mother's first meal, cannot be too strongly reprobated. It is almost certain to cause griping, sometimes diarrhœa, and uniformly restlessness, thereby greatly disturbing the quietude which the mother at this time ought to enjoy. The colic complained of by some practitioners, and attributed to the tying of the cord, can, we think, more philosophically be traced to improper food given through the ignorance or carelessness of the nurse. It should be remembered that the infantile stomach, a very small and feeble organ, is altogether incapable of digesting such crude articles of diet. The only nutriment well suited to its powers is milk, especially human milk, which in its composition so

nearly resembles the blood into which, by the digestive process, it is destined to be transformed. "Of all the fluids of the economy," says Cazeaux, "it approaches nearest to the blood in composition."

It sometimes happens, when the child is applied to the breast, it refuses to take the nipple, or seems unable to hold on to it so as to suck. This may arise from various causes, which should be carefully scrutinized, and the particular difficulty, if possible, removed. If the face be pressed against the mother's breast, the nose is flattened and the nostrils closed, so that respiration is prevented, and the child, therefore, cannot suck. It lets go the nipple from the necessity of breathing through the mouth. Again the nipple may be so short, or wholly depressed, that it cannot be taken hold of. This may be remedied by suction by the mouth of the nurse or some other person, or by drawing it out by means of the breast pump or exhausted whiskey bottle, or by wearing nipple glasses, or wooden or metallic shields.

Occasionally, although not so often as some suppose, the frænum of the tongue is inserted so near the point of that organ, and is so short from below upward, that the tongue cannot be protruded between the lips, or at furthest beyond their outer margin. The infant is then unable to suck, or sucks with great difficulty. This malformation is called tongue tie. It is to be remedied by a very simple operation, which, if the hindrance to sucking be considerable, should be performed at an early day. In order to effect this, "the head of the child being held slightly backward, an assistant pinches the nose to oblige it to open its mouth. The frænum is engaged in the slit of the plate attached to the grooved director" (or that in the end of the spatula for depressing the tongue), "and then raising the tongue forcibly, the surgeon, holding a pair of blunt scissors in his right hand, divides the frænum at a single stroke, taking care to direct the point of the scissors downward and the farthest possible from the tongue." Cazeaux.

It is surprising how small a slit will completely relieve this difficulty. Care should, therefore, be taken in the performance of this simple operation, not to cut too deep, partly because it

is unnecessary, and partly because, neglecting this precaution, it is very possible to sever bloodvessels so as to give rise to very troublesome hæmorrhage.

Sometimes the nipple, instead of being caught between the upper surface of the tongue and the roof of the mouth, passes into the mouth beneath the tongue, in which case suction is impossible. The correction of this difficulty is too simple to need description.

I was once called to the case of a child several weeks old that could not suck, as it was supposed by the parents, from tongue tie. Upon examining the *frænum linguæ*, I could see no deformity, but found the cause of the difficulty in cleft palate of such a nature as to admit the air from the nasal passages, and thus render it impossible to form a vacuum within the mouth. The only resource left was to feed the child by hand. It died in a few weeks of dysentery.

Finally, the child may refuse to suck, from the nipple being in some way or other offensive to its taste. This may arise from the neglect of proper cleanliness on the part of the nurse or mother. The secretions from the skin, covering or surrounding the nipple, may have accumulated in its fissures, and by its unpleasant taste produce disgust in the child. The remedy here is obviously, to wash carefully the parts with warm water and a soft cloth before the child is applied, and to remove by the same means the secretions of its own mouth left upon the nipple, as soon as it is done sucking.

When the child suffers from coryza or cold in the head, it is unable to hold the nipple, because it cannot breathe through the nose, and must necessarily keep the mouth open for the purpose of respiration. In this case the milk should be drawn and fed to the child by hand, as otherwise it might suffer for want of nourishment before it should be able to take it in the natural way. At the same time remedies should be used to procure relief as soon as possible. Aconite in the beginning, if accompanied by high fever—otherwise *Ars.*²⁰⁰—also *Apoc.* can. is a good remedy.

A late writer has endeavored to show that attempts on the part of the infant to suck when the nose is obstructed, is a not

unfrequent cause of permanent deafness. Such, therefore, inevitably become deaf mutes, and from this cause he maintains, that that condition in many cases arises. We cannot here enter into the argument in full, but thought it not without force, and would by all means advise mothers to draw the milk and feed their infants with the spoon, when there is any considerable obstruction of the nasal passages from coryza or any cause whatever.

CHAPTER VIII.

MANAGEMENT OF THE LYING-IN WOMAN AFTER CHILDBIRTH.

When the patient is delivered, comfortably put to bed and the proper instructions given to the nurse, it has been my uniform practice, when no other medication was specially demanded, to leave a solution of a few drops of tincture of Arnica in a tumbler or half tumbler of water, a teaspoonful to be taken every two hours for at least the first twenty-four hours. After this I give *Ars. a.* 2d or 3d at a like interval for the next succeeding twenty-four. Whatever virtues these may have or lack, I can only say that since I have adhered to this practice I have had but little trouble with the usual ill sequences of labor, even the old stereotype milk fever seldom makes its appearance. From the known effects of Arnica in contusions we may expect it to be useful after severe labors, wherein there is always more or less injury done to the soft parts of the mother. The properties of Arsenic as an antiseptic are also well known. The Arnica itself is probably a direct antidote to septic poisoning.

The proper adjustment of the lying-in-room is a matter of great importance. It should be sufficiently large to contain

such a volume of air, as will suffice the patient for healthy respiration through the night, while the windows cannot be safely raised. All suspended clothing and unnecessary furniture should be removed. It should be as remote as possible from all unavoidable sources of noise. It should be well supplied with windows for the admission of fresh air, and these should be so arranged as to admit the air without producing a draft immediately upon the patient. The bed should be placed so as to avoid this source of great danger. I knew a woman lose her life through spinal inflammation brought on by having her bed so placed that a door opening into a cold room, in the depth of winter, was directly opposite to her shoulder.

The room should be partially darkened, as a strong glare of light is very injurious to the patient for the first few days after delivery. The eyes are especially sensitive to light, and through them the brain becomes irritated. The patient should be guarded against the intrusion of strangers and even friends, except those of her own family, for at least the first ten days after delivery. Nothing, perhaps, is more likely to injure her than the excitement necessarily attendant upon seeing and entertaining strangers. This is especially true of nervous, excitable women, and those generally of feeble constitution. I remember a case which gave me a great deal of trouble and which well illustrates the evils arising from this quarter. The patient was a young woman of nervous temperament and rather imperfect health. Her mother had died of fungous hæmatodes. It was her first confinement, and knowing her delicacy I had attended her with special care, and as I thought, had brought her quite safely through a rather tedious labor. The child was born at 1 o'clock P.M. Shortly after my departure, and during the same afternoon, some friends who were about to leave for the West called to congratulate her and at the same time to bid her good bye. Several of her young female friends with great indelicacy came in "to see the baby." All this tended greatly to excite her, and when I made my morning visit next day, I found her feverish, with quick pulse, perhaps headache, and generally very unwell. Her convalescence was afterwards slow, interrupted and very unsatisfactory.

At our first visit after delivery, if this be within a few hours, we are often called upon to prescribe for "after pains." By this we understand a severe spasmodic, bearing down pain resembling those of labor, and occasionally represented by the patient as being equally severe. This suffering arises generally from an effort of the womb to expel clots which have accumulated within its cavity, and if not very severe need not be interfered with. Women in their first confinement are generally exempt from suffering from this source. We should be very careful to distinguish between after pains and other affections which they resemble. The former are intermittent or paroxysmal. They come on at pretty regular intervals, last for a few moments and then subside. In the intervals the patient is free or nearly so from suffering, and unless the labor has been severe or protracted there is no extraordinary tenderness in the region of the womb. Unless arising from some other cause there is no accompanying fever, nor unusual quickness of the pulse excepting during the paroxysm. Generally no antecedent chill has ushered in this phenomenon. The patient does not from after pains alone complain of feeling unwell.

The affections with which after-pains are liable to be confounded are incipient peritonitis, and what has been called false peritonitis. The former is ushered in by chill, mostly severe, followed by intense fever—the pain, too, is continuous, not intermittent, and is associated with extreme tenderness of the abdominal region. In false peritonitis, the pain sets in suddenly, is not always and perhaps not often preceded by chill and is unaccompanied by febrile symptoms, unless it be through the intense suffering which it often causes. There is, too, in this case extreme tenderness of the abdominal region to the touch, unless the hand at first be very cautiously applied. It is said, however, that if so applied, the pressure may be gradually increased without inflicting pain.

The remedies proposed for after-pains are the following: Coffea, in nervous subjects, Chamomilla, Caulophyllin, Morph. acet., Sec. cor., Cupr. ars. Place the patient upon the vessel to encourage the expulsion of clots, if there is reason to sus-

pect an accumulation of these within the womb. The student will be most effectually aided in making his selection by a thorough study of the pathogenesis of each of these medicines and a careful comparison of this with the symptoms of the case before him. To construct cases from our imagination or even from the drug symptoms as enumerated in a symptomencodex, would be for the most part to give such as are seldom found, at least, in most of their details, at the bed-side. We may however say, perhaps with advantage, that *Coffea* is generally recommended in the case of nervous women, especially if they are suffering at the time with nervousness or fidgety-ness. The old fashioned Acetate of morphia, in the first or second dec. trit., will often be found in practice quite as good as anything else. This may be given by dissolving a few grains, say fifteen, of the second decimal trit. in half a tumbler of water—the patient to take a teaspoonful of the solution every half hour until some relief is procured—when the intervals should be lengthened or the medicine altogether discontinued. *Xanthoxylum frax.* is recommended by Dr. O. B. Gause. *Viburnum opulus* and *Viburnum prunifolium* are also worthy of trial. In feeble labors, which are perhaps most frequently followed by severe after-pains, the latter may often be forestalled, by now and then administering toward the close, a few drops, from six to ten, of the tincture of Ergot in water. This not only excites the womb to more vigorous action and thus hastens the termination of labor, but it also causes it to contract more firmly, after the expulsion of its contents, and thus prevents the formation of clots, the great source of this trouble. I recently attended a lady, who in her former confinements had been greatly annoyed by after-pains, to whom I administered Ergot as above, and who on this occasion almost wholly escaped her accustomed sufferings.

Belladonna ought to do good service, when the bearing down sensation is very intense, as if prolapse or even inversion of the womb was likely to take place. Ergot may be administered likewise subsequent to delivery, and after the pains have set in, if they seem to be associated with irregular contractions of the womb, unless these have been caused by excessive doses

of that drug previously given. The Ergot should here be given in much smaller dose, as it is the homœopathic or curative effect at which we aim.

There sometimes occurs shortly after delivery a kind of pain more continuous than the after-pain, very severe and annoying, but without its distinct characteristic bearing down sensation. Atropine, 3d decimal, is the remedy for this.

Occasionally, about the end of the second or beginning of the third day after delivery, the patient experiences headache, slight rigors, stinging in the breasts, accompanied by febrile excitement more or less intense. This is what has been called "milk fever." My patients generally escape it in any noticeable degree. It is supposed by some, and I am disposed to agree with this opinion, to be a slight form of septicæmia, and is almost completely antidoted by Arnica. It usually passes off within twenty-four hours, and convalescence, after this slight interruption, advances in a satisfactory manner. If the fever runs *high*, with full bounding pulse, we may administer Acon. Ars. alb. will likely be useful when septicæmic symptoms predominate.

The condition of the breasts should be closely observed and excessive engorgement carefully guarded against. This is prevented by diligently applying the child, which should have been kept up to the time of lacteal secretion, at least in ordinary circumstances, without extra nourishment, but frequently induced to take hold of the nipple, so as to become an adept in sucking by the time nature has provided its aliment.

If the child fail to exhaust the milk, as it will sometimes do when small or feeble, or when the secretion is too rapid and abundant, other means must be resorted to in order to prevent engorgement. The best method will be the application of the mouth of the nurse or of some one else. But most nurses in our day cannot or will not overcome their aversion to this operation. The breast pump, if tenderly used, will usually succeed very well. That known as Dr. Meigs', is very simple in its construction, and can be applied by any one of ordinary dexterity. The milk may also be drawn in many cases, such in particular where the nipple is well formed, by

means of a common long necked bottle. After warming the bottle, a small quantity of hot water is thrown into it, and briskly shaken until the bottle is filled with steam. It is then immediately, if not too hot, applied to the breast, so as to include the nipple in its mouth, and held in that position firmly, so as to exclude the entrance of the air, until the steam condenses. The nipple will be more and more forced into the neck of the bottle by the external pressure of the atmosphere, and the milk forced out.

When any portion of the mammary gland becomes solid, or caked, as the women sometimes term it, while, at the same time, it is not very tender or painful, and is free from redness, indicating inflammation, gentle friction with the hand should be applied, forward in the direction of the nipple, the pressure being very gentle at first, but somewhat increased as the operation proceeds. The hardness will generally soon disappear under this treatment. It is well to lubricate the hands before rubbing with a little olive oil or other soft grease, simply to avoid abrasion of the skin. It is to be remembered, however, that the force is not to be such as to endanger the bruising of these tender structures.

If, in despite of all these precautions, inflammation of the breasts should set in, it should be promptly treated, as it is only by so doing that that terrible calamity of the lying-in woman, mammary abscess, can be avoided. As this occurrence, should it happen, is not in the course of ordinary convalescence, we will speak of the proper treatment under another head.

The nipples require our particular attention while the lying-in woman is under our care. We will often find this organ so retracted, or buried in the substance of the breast, that the child cannot seize it so as to suck. This, if not remedied, almost always leads to engorgement, and this latter to inflammation and mammary abscess. The sunken nipple may usually be drawn out by means of the breast pump, assisted by wearing the ordinary nipple glass.

Excoriations or chaps of the nipples also claim our attention ; first, the prevention, the most important, and next, if this be

unsuccessful, the cure. If our patient have placed herself under our care, some time before her confinement, especially if it be her first pregnancy, we should advise her to prepare her nipples by such processes as tend to harden or tan the skin of this delicate organ. Before going to bed every night for some weeks previous to labor, she should bare her breasts and expose them to the air. This will so change the skin as to make it more like that covering the hands or face, which is constantly exposed to the air, and therefore less tender than upon those parts from which air and light are excluded. It would be well, too, especially for women of delicate complexion, to apply to the nipples the leaves of green tea, upon which hot water has been poured, or decoction of oak bark. These applications harden the skin by a process perhaps somewhat resembling that of tanning. Their astringency, too, probably diminishes the vitality of the nervous filaments within the skin covering the nipples, and thus renders them less irritable.

When the child has been put to the breast, the nipple should always be washed with tepid water, after it is done sucking. This removes the saliva, and leaves the organ clean and free from any external irritant. If there still seem to be danger of excoriation, it will be better before this takes place, to procure a good nipple shield, and accustom the child to sucking through it. Most forms of the gum elastic shield are faulty, and often cannot be used. Many years ago the skin of the ends of heifer's teats was used. These teats generally answered well, but were troublesome, as they must always be kept in water or alcohol, and it was difficult to preserve them in a state of entire purity.

If, notwithstanding all our efforts to prevent it, the nipples should become sore, it is proper we should immediately resort to measures for their relief. Women suffer beyond all computation from this apparently trifling affection—often so much so as to create the utmost horror of nursing the child, and to render life itself a burden for the time.

Various remedies have been recommended by different authors—more than we care to recount. In case of excoriation of the top of the nipple, we have found nothing answer so well as the topical application of a *weak* solution of muriate of hydras-

tia, in glycerine. Just sufficient of the muriate should be dissolved to give the solution a slightly yellow color. A small portion of this may be applied when the child has done sucking, and the nipple is washed off and dried. The application should be removed before applying the child to the breast, as the bitter taste may cause it to refuse to suck. Nipple glasses should be worn during this treatment, otherwise a dry scab will form, and be repeatedly torn off by the child's mouth, in the act of sucking, and thus give rise to deep ulceration.

If the lesion be in the form of fissures or chaps, an ointment composed of fresh lard and a few grains of the first dec. trit. of Graphites, occasionally rubbed on, will often answer an excellent purpose. If indicated, a higher trituration of Graphites might at the same time be given to the patient internally.

A pretty strong solution of the nitrate of silver applied to the nipple in the case of ulceration—as also superficial excoriation, chaps, etc., will generally be found efficient. Some speak highly of the oil from the kernel of the butternut (*juglans cinerea*) as an excellent application. I have not tried it, having always succeeded with one of the foregoing remedies, and I have seldom been obliged to go beyond the one first named above.

The food of the lying-in woman is a matter of no small importance, if we would secure a satisfactory convalescence. Professional opinion and consequent practice has undergone considerable change within the last few years, upon this subject. Formerly we kept our patients for the first few days upon oatmeal gruel, or something as nearly equivalent as possible. After the *milk fever* had passed, toast and tea were allowed, and later still, chicken broth. Occasionally women boldly overstepped these restrictions with apparent impunity, and this circumstance, perhaps, contributed at least somewhat to procure a revision of the old code.

We are, perhaps, now in danger of going to the opposite extreme. In this, as in most of the concerns of life, it is well to regard the maxim of the illustrious Roman poet: “in mediis viis tutissimus ibis.” There can, indeed, be no specific rules for diet given, that will be found applicable to every case. One

patient may eat with impunity what will be injurious to another, apparently under the same circumstances. Even the same woman may safely partake of food in one confinement, and in another, under different circumstances, be injured by the same or similar diet.

There are, however, general considerations which will guide us in prescribing a proper regimen, and we will here premise that where there is any doubt, it is always best to be upon the side of safety.

After prolonged and severe labors, there is mostly great prostration of the vital powers, a condition lasting a longer or shorter time, according to the recuperative energies of the patient. The digestive organs are, for the time being, involved in the general asthenia of the system, and disqualified from performing vigorously their appropriate functions. The secretions are deranged, or at least may be so, so that healthy bile and gastric juice are not furnished in appropriate quantity and quality to aid in the digestive process. Hence digestion is feebly and imperfectly performed, while at the same time there may coexist with this state of things, exalted irritability of the nervous filaments supplying the coats of the stomach. Hence it is plain that food difficult of digestion would be very inappropriate, and very likely to do harm. In such cases we would say, be, by all means, careful to allow the patient nothing but the most simple and digestible aliment, and having secured these properties, let it be as nutritious as possible, until she has in a good degree regained her strength and rallied from her prostrate condition. By no means allow her anything that has disagreed with her while in health. Many years ago I attended a young woman in her first confinement, who had a very tedious and difficult labor. Her convalescence proceeded about as well as could be expected, up to the tenth day, when, according to custom, she made an effort to sit up out of bed. Her mother, who nursed her, joyous at the event, prepared her a sumptuous dinner, followed by a rice custard and cream, as dessert. Milk in all forms had always disagreed with her, causing cholera morbus whenever she took it. In this instance it was followed by severe purging and vomiting, and the irri-

tation of the bowel extended to the womb. After several days of suffering, excessive hæmorrhage came on, and within a few hours death closed the scene.

On the other hand, where the labor has been short and easy, and the patient has retained almost her usual strength—especially if she have previously been healthy—with good digestive powers, she may with safety be allowed a better diet. As a general rule she should have as nutritious food as we have good reason to believe she can bear with safety. In all cases we should cautiously feel our way. If we have doubts of the safety of any article, if given at all, let it first be given in small quantity, and not repeated until we are satisfied that it will do no harm.

Throughout the whole course of her confinement the patient should carefully avoid all exertion beyond her strength. Nothing more retards convalescence and renders it imperfect and unsatisfactory, than premature or too great taxing of the strength. After the exhausting efforts of labor, and the hæmorrhage which usually attends it, under all circumstances the strength is slowly recovered. So great, too, is the change produced upon the womb and other abdominal organs by gestation, especially in the latter stages, that considerable time is required for these organs to regain their normal condition, and until they in a great measure do so, health and strength are not fully re-established.

As to the time when the woman may safely leave her bed, no rule can be given applicable to all cases. The Indian squaw, it is said, is sometimes taken with the pangs of labor when her party is upon the march—turns aside and gives birth to her offspring, and again overtakes her companions before the close of day. I have known rare instances among our German population, where the same woman at the time of her confinement performed the functions of parturient, accoucheur and nurse, doing all for herself and child that the exigencies of the case absolutely required, and in a day or two resumed her household duties. Indeed the latter could hardly be said to have been suspended, and yet these women made good recoveries, and continued to enjoy robust health.

But on the other hand I have known patients leave their bed on the tenth day, and shortly thereafter engage in their accustomed employments, and apparently, in consequence, suffer prolapse of the womb and all its attendant evils.

The old rule generally accepted by women, at least in rural districts, to leave the bed on the tenth day is entirely too arbitrary. This, perhaps, had its origin in the belief that within this limit there is danger of secondary hæmorrhage from undue exertion. Be this as it may, there are some women who may safely sit up, and even walk about the room, at an earlier period, while many cannot, without risk, do so upon the tenth day, or even several days later.

The rule which I would lay down and emphasize, is this: *Regard the condition and strength of the patient*, and bear in mind what we have before in substance stated, that any effort unsuited to these, is premature and damaging, and tends to retard rather than to accelerate recovery. It is well, even from an early stage of her confinement, when the patient will bear it, that is, when she experiences afterwards a feeling of increased comfort, and not that of exhaustion, to take her up from her bed while it is being made, or, for the sake of change, to lay her for a time upon a couch near to her bed. But if she be feeble, feverish, and with quickened pulse, then beware of premature exertion—its effect will certainly be not to make her condition better, but worse.

As soon as she is sufficiently strong, and provided we have no reason to suspect lurking disease, as evidenced by quick pulse, abnormal temperature, etc., she should enjoy passive exercise in the open air, when the weather is suitable. A carriage ride in the early part of the day, while she is invigorated by the rest and sleep of the past night, will greatly contribute to complete her convalescence. We should always aim at the perfect recovery of our patient's health. A young and healthy woman, after giving birth to her child, should regain her former status, and feel nothing the worse on account of her maternity.

CHAPTER IX.

DEVIATIONS FROM NORMAL LABOR.

Unfortunately the process of parturition is not always as simple as that we have described in a preceding chapter. On the contrary, every practitioner will encounter many deviations from it, more or less divergent. The *causes* giving rise to departures from what may be regarded as typical labor, will be found to exist in the mother, in the child, or simultaneously in both. And first we will speak of such as arise from some peculiar condition of the mother.

RETARDED LABOR.

The deviation from the simple form of labor most frequently met with, and least divergent therefrom, is that wherein the process is merely protracted beyond the usual length of time which we are accustomed to regard as normal. Such delay may, it is true, be caused by some condition of the child, but here, it will be remembered, we are speaking only of that having its origin in the mother.

There is no definitely fixed period which, strictly speaking, characterizes normal labor. In primiparæ, labor generally advances more slowly, and occupies longer time for its completion, than in those who have already given birth to one child or more. This is especially true of primiparæ somewhat advanced in life; at least it has been so in my own experience, however it may have been in that of others. Still we have no difficulty in deciding, in individual cases, whether a labor has or has not been prolonged beyond the limit within which we might reasonably expect it to terminate.

A very common cause of tedious labor is the lack of sufficient expulsive power in the womb. The pains are perhaps of

infrequent occurrence, the contractions are not energetic or they are so brief as to have little effect. This defect may arise from various causes. A common one is a debilitated condition of the nervous or muscular power of the womb, either inherent in that organ itself and of a purely local character, or else derived from the natural constitutional feebleness of the patient, or from debility caused by antecedent or co-existing disease. Patients who inherit a feeble constitution or who have, previous to their confinement, been reduced in strength by disease, will often be found very deficient in parturient energy, and their labors will usually be accordingly protracted. To this, however, there are exceptions. The feebleness of constitution, causing proportionally diminished uterine power, may also have prevented the full development of the fœtus, so that, at birth, it may be unnaturally small, while, at the same time, the generally relaxed condition of the system may so modify the soft parts that they oppose little resistance. Both these circumstances are favorable to speedy delivery; and this is sometimes the unexpected result. Again such women may have unusually wide pelves, especially so in relation to the size of the fœtus, if imperfectly developed.

We think, however, we have generally found antecedent or simultaneous disease, so to modify labor as to render it tedious. A lady, whom we had previously attended in several confinements, who always gave birth to her children, of large size, without manual or instrumental aid, and with as much expedition as we could reasonably expect, had had a severe attack of pleurisy, from which she was exceedingly prostrated. She was taken with labor early in the morning, the pains were regular, but distant, short and feeble, and continued so throughout the day. By five o'clock in the evening the head had only dipped into the superior strait, although the os uteri was fully dilated when I first saw her in the morning, and the membranes were artificially ruptured not long after. The head having for a long time made no advance, she was delivered with forceps. Both mother and child did well.

Again the pains may be rendered feeble and inefficient from the existence of too large a quantity of the liquor amnii within

the womb. This gives rise to overdistension, the natural consequence of which is a thinning out of the muscular walls of the organ, and of course, a diminution in their contractile force. When overstretched the fibres become, no doubt, to some extent paralyzed. We find an analogous case in the overdistension of the urinary bladder, which sometimes takes place after delivery, through neglect to void the urine at the proper time. Owing to the extreme looseness of the surrounding parts, the patient does not feel her need, until a vast accumulation has taken place, when she finds herself powerless to relieve herself, on account of the paralyzed condition of the overdistended bladder, and the use of the catheter becomes absolutely necessary.

Another source of inefficient uterine action is found in irregular contractions of that organ. The uterine fibres contract, but not uniformly. The contractions may be attended with suffering even greater than that experienced in normal labor, but pain is one thing and efficient uterine action another. They may and often do co-exist, but not necessarily, and they are not by any means identical. • When the contractions are of this character, the various processes necessary to the completion of delivery are not harmoniously carried on, and labor is retarded.

Another cause of feeble uterine action will be found in exhaustion from long continued effort. The pains may at first have been vigorous, but baffled, on account of some impediment to their success, they have grown weaker and weaker until, perhaps, finally they entirely subside. It is truly wonderful how long the womb will sustain its action—and how often it will sometimes rally and renew its efforts after a season of rest. But if the obstacle is beyond its power, it will ultimately and hopelessly succumb. In the latter case labor is not only rendered tedious, but arrested.

Dr. J. Matthews Duncan, in a paper read before the Obstetrical Society of Edinburgh, December 12th, 1877 points out a cause of inefficient uterine action different from any of the foregoing. It consists in a premature retraction of the body of the uterus over the surface of the child, so as, so to speak,

to lose its purchase in its propulsive efforts. This condition, he says, is most apt to occur in primiparæ, of nervous temperament and a high degree of excitability. In these cases the pains continue vigorous, but produce little or no effect.

To enable us to distinguish between weak labor, arising from inertia of the uterus and delay from the cause above stated, Dr. Duncan makes the following statements "In the former the pains are generally seldom, short, and cause little suffering. In the latter they may be frequent, and of ordinary duration and painful. In the former, bearing down is generally slight or absent. In the latter, it is unaffected and powerful. In the former, the uterus proper is flabby, and its feeling under the hand during a pain, is never that of great tension. In the latter, it is quite otherwise. In the former, the uterus is deficient in irritability under kneading or friction. In the latter it is otherwise. In the former the lower margin of the uterine body cannot be felt at all, or is indistinctly perceived immediately above the symphysis. It cannot be felt and recognized with ease. In the latter, it is rapidly elevated to near the umbilicus as labor goes on, and is comparatively easily felt; its hard and somewhat rounded edge marking a limit between it and the cervix; the former hard and firm and allowing nothing to be felt through it while the pain lasts; the latter thin and tight during a pain, and even then allowing the foetal parts to be felt through it." (*Obstetrical Journal of Great Britain and Ireland.*)

Another source of delay, rendering labor tedious, is rigidity of the os uteri. The pains have set in, and perhaps for some time manifested considerable activity, but upon examination the os uteri is found undilated, and it may be not even in the soft condition which usually precedes dilatation. Hour after hour passes and the same state of things remains, unless it be altered by appropriate treatment. This condition may, if left to itself, last for days, the womb acting energetically for a few hours, and then wearied out, ceasing to act. When it has become invigorated by rest it will resume its functions, only to be baffled and sink again into inactivity. If the pelvis be large, the lower segment of the womb, through which the pre-

sentation may be indistinctly felt, is sometimes forced down so low that upon an examination the inexperienced might suppose the child would soon be born. Upon the cessation of pain, however, the presenting part mounts up to its former position. One woman of whom I have known, remained in this condition for seventy-two hours, and was afterwards delivered by the natural powers,—another, about the same time, remained as long, but the womb in her case sunk into perfect quiescence, and, failing to rally, she was delivered with forceps,—and another still was in labor, from the same cause, for a whole week. She was ultimately delivered by embryotomy, and at that time one of her attendants informed me the os uteri would admit only the ends of three fingers. The first two recovered, both mothers and children doing well—the last died.

Again the rigidity of the os uteri, if any existed, may have given way and the head may have come down so as to rest upon the perineum, but may there have become arrested by the unyielding condition of that organ, thus causing considerable delay at the close of labor. This difficulty is most frequently encountered in first labors, especially in the case of those somewhat advanced in life. Under the proper management, however, it hardly ever prolongs labor very much beyond its normal limit. Exercising patience, and with the use of appropriate means, the structures gradually yield and permit the head to pass. Where the rigidity is extreme, the womb is apt to take on unwonted action to overcome the obstacle, and hence arises considerable danger of some form of laceration, an accident often very serious in its nature and always carefully to be guarded against.

Again labor may be very considerably retarded by a slight disproportion between the fœtal head and parturient canal. This may depend upon a reduction in the diameters of the pelvis, not amounting to deformity, and still admitting of delivery by the natural powers. In this state of things the head meets with more than ordinary resistance in its descent. Not having space to avoid this resistance by moving away from it, it accommodates itself to circumstances by undergoing the

process of moulding, as it is called—that is, the cranial bones overlap each other at the sutures, and the scull, being ordinarily very flexible, contracts in its diameters which lie across the pelvis, and lengthens in its diameter corresponding with the axis of the parturient canal,—in other words, it elongates or becomes wire-drawn. This process of moulding requires considerable time, and usually not only prolongs labor but adds much to the suffering of the patient. It is truly wonderful, however, how the powers ultimately triumph over this difficulty.

Another source of protracted labor, perhaps worthy of notice, though not generally mentioned by authors, is hyper-æsthesia, or extreme sensibility of the nerves of the patient, supplying the parts concerned in parturition. Every effort of the womb is attended with extreme suffering, although no apparent cause exists why it should be so. The patient dreads her pains and shrinks from their approach, and, as far as in her power, suppresses them. If still upon her feet, as soon as she perceives the commencement of contraction, she starts and steps rapidly around, thus diverting nervous power from the action of the womb, and thereby rendering it inefficient or nugatory.

The extreme sensibility of the parts, moreover, interferes with the regular dilatation of the os uteri by causing spasmodic constriction of its fibres, and thus gives rise to considerable delay in the regular process of labor. It will be well to remember that this spasmodic constriction is a different pathological condition from the simple unyielding rigidity of the os, of which we have spoken above, and requires a different treatment.

Extreme suffering without apparent cause, is probably in most cases owing to hyper-sensibility of the nerves, but not always so. I once attended a patient whose sufferings were intense, although her uterine contractions were scarcely as strong as ordinary. In this case there seemed to be very considerable delay from the influence of the will holding in check the action of the womb. Upon examining the placenta after delivery, I found its uterine surface interspersed with gritty

particles, causing in the finger drawn over it a sensation similar to that produced by sand-paper. Here the excessive suffering was probably owing to the action of these particles upon the internal surface of the womb during its contraction.

TREATMENT.—When labor is protracted through want of energetic uterine action, arising from feebleness of the womb, inherent or sympathetic, the proper treatment will be to excite that organ to greater energy. This, where the excitability of the womb is not exhausted by excessive fatigue or disease, can usually be done by administering Ergot in *small repeated* doses. These should be given at short intervals, say fifteen or twenty minutes, and the dose may be increased, if after a few repetitions it should not produce the desired effect. We may begin with six drops of the saturated tincture, or somewhat smaller dose of the fluid extract, in water—or we may prepare an infusion, by putting about a dram of the freshly powdered drug, if possible of the last year's, or recent growth, into a teacup, and filling the vessel within half an inch of the top with boiling water. This should stand for awhile, in a warm place to draw. A teaspoonful of the infusion may be given, at the above named intervals, until the object is attained. I have thought the infusion prepared from the fresh drug, acted more promptly and certainly than any other preparation. By giving the Ergot in this manner, in small, frequently repeated doses, we avoid the ill effects usually attributed to that agent. We may, too, administer it in this way with safety, even when contra-indicated, as formerly, and still generally given. The contractions thus produced are but the intermittent pain of labor intensified. If the os uteri be not fully dilated, but soft and dilatable, the increased energy evoked by the Ergot assists in its further dilatation. As for the foetus, it is not subjected to any other than the normal pressure and is, therefore, exposed to no additional risk. I have never had a case of still-born child under this method of management, except where there was abundant evidence that the child had been dead some time before. I have used the fluid extract of Caulophyllum for a like purpose. After some considerable experience with the latter article, I have

abandoned it in favor of the Ergot. There are, however, cases where Ergot, and probably every other medicinal agent, will fail to arouse the requisite expulsive power. This is especially true where the womb is exhausted by long and fruitless exertion. There must be in the organ a susceptibility to the impression of the Ergot, or its administration will be futile. In such cases, after a faithful trial without result, if the patient's condition do not seem to require immediate interference, we may wait awhile to see whether the resources of nature may not bring about a favorable change. The refreshing influence of a little quiet sleep will often do much good. If this fail, and especially if the strength of the patient seem to be suffering still further exhaustion, we must at once resort to the forceps, unless contra-indications exist, which would render this procedure unjustifiable. We say forceps, for we here assume the presentation to be that of the head. If the forceps do not succeed or be not available, turning or craniotomy will be our next resource.

When the feebleness of uterine action is owing to disease still existing, we should endeavor to select the specific for such diseased condition and administer it at once, with the hope of at least suspending its effects. If we have been engaged beforehand to attend the patient it is our duty to inquire into the state of her health, and if in any respect defective, we should endeavor to remove or at least palliate her disease before her confinement takes place. For instance if she have been suffering from a rheumatic or neuralgic affection of the womb, which by the way is a very fruitful source of protracted labor, we should treat that condition. Puls. or Caul., or if the pains be very severe, Viburnum will often be found useful and even remove the affection.

When feeble contractions arise from too great an amount of liquor amnii, which may usually be known by the large size and extreme tightness of the abdominal region of the patient, we should, as soon as the os uteri is found to be soft and dilatable, if not fully dilated, evacuate the waters. Shortly after this is done the pains usually become more vigorous. If they do not, Ergot given as above directed, will generally suffice to evoke them.

When we have reason to suspect irregular contractions of the uterus to be the cause of delay, and our suspicions may be confirmed, if upon laying the hand during a pain over the region of the womb, we find it do not assume the globular form usual when its action is symmetrical, we may try small doses of Ergot here with a view to its homœopathic action. Probably we should obtain good results from Cupr. met. But perhaps no agent will so certainly equalize these partial contractions as chloroform administered in the usual way by inhalation. As soon as a moderate degree of anæsthesia is produced, irregular action ceases and the labor generally progresses regularly to a favorable termination.

When the cause of delay may be traced to fatigue of the womb, more or less nearly approaching to exhaustion, we may again try Ergot as before indicated. But here it will very possibly disappoint us. If the exhaustion be not too great the womb usually rallies for awhile under the stimulus of this agent, and if the labor be near to its close, the natural powers may triumph. But this is too frequently not the case. Generally after a short spasmodic effort the womb lapses into a more profound exhaustion than before.

When this occurs we need not wait longer—unless it take place in the first stage of labor, when we may hope that sleep may restore the patient to renewed strength. If she be nervous and fidgety, Coffea will probably conduce much to this result. I would even try a cup of coffee, which with some persons is a great restorer of exhausted strength. But if the labor be advanced, and the pulse become quicker and be losing its force, while there are other symptoms of general exhaustion, we must lose no time in our resort to the forceps, or to turning if that operation be rather indicated, or to such other aid as the exigencies of the case may require. If the labor be far advanced when the action of the womb comes to a standstill, that is, if the head be already resting upon the floor of the pelvis and the perineum and other soft structures be suitably relaxed, we may possibly terminate delivery by pressure upon the fundus, in the proper direction, as advised by some of the German authors. Even placing the patient upon her knees in

the bed, may so far arouse vitality as to effect the expulsion of the child.

Where delay is caused by premature retraction of the womb, as pointed out by Dr. Duncan, it is evident that very different remedial measures are required from those which may be proper when labor is retarded through inertia. In such case there is no lack of uterine energy, it may even be excessive, and it fails to accomplish its purpose, simply because it has, so to speak, not a sufficient hold upon the object upon which it seeks to expend its force. The indication, therefore, is rather to quiet uterine action, and to supply the additional force which may be necessary to accomplish what the womb is unable to do, because it works at a disadvantage. Chloroform, judiciously used, will usually answer the first purpose, the forceps the second. Nor should we, when a case of this kind is fairly diagnosed, be slow to resort to these measures, as neglect may subject the mother to danger through undue extension of the cervix and vagina, and the child through premature detachment of the placenta or injurious pressure upon the umbilical cord.

When the labor is protracted by rigidity of the os uteri, we have an excellent remedy in *Actæa racemosa*, if this has not been given previous to labor, as before recommended, and without result. A few drops of the tincture of the root may be diffused in half a tumbler of water and a teaspoonful given every fifteen, twenty or thirty minutes, according to the urgency of the case.

If great rigidity exist, and should it not yield to this agent, we may, with fair hope of success, try the effects of a jet of warm water, thrown against the os for some time by means of a syringe. The patient may be placed with her hips near the edge of the bed and upon an oil cloth or gum blanket, and this so arranged that the returning current will flow into a bucket or tub, so situated as to receive it. This failing, we may try the colpeurynter or Dr. Barnes' dilators. The former is simply a gum elastic bag, terminating a tube of the same material, which is furnished with a stopcock, to retain the air or water injected. The bag is rolled up and pushed into the

partially dilated os in an empty condition. It is then, by means of a syringe, inflated with air or filled with warm water—the latter is preferred generally. The relaxing effects of warmth are hereby superadded to the gradually distending force of the colpeurynter. Air is more elastic than water, but some danger from it is apprehended in case the gum elastic bag should burst, an accident which, in careful hands is not very likely to happen. Barnes' dilators are constructed upon the same principle, and are to be preferred to the colpeurynter, on account of their easier introduction and more perfect retention. The bags, when flattened, have the shape of a violin, and on account of the middle being narrower than the ends, when in situ, they are not so likely to be extruded. Being of three different sizes, they can be introduced one after the other as dilatation progresses. To facilitate their introduction, there is a little flap arranged externally, in the form of a pocket, into which the end of a female catheter or sound can be thrust, for the purpose of carrying them up and pushing them through the os uteri.

Chloroform, administered by inhalation and pushed to pretty deep anæsthesia, is perhaps, in most cases at least, the very best relaxing agent. If its effects be kept up for some considerable time, relaxation seldom fails to follow. If the anæsthesia be not very deep, it may be used simultaneously with repeated doses of the *Actæa racemosa*. Dr. Playfair highly extols chloral, given in water, fifteen grains per dose, at an interval of twenty minutes, until three doses are taken—if unsuccessful, another dose, at an interval of one hour. It is very seldom that the os does not yield to some of these appliances. It is, however, recommended by some authors, where other measures do not succeed, to resort to incisions, for the purpose of procuring an artificial outlet for the fœtus to pass. This may be justifiable where all other means fail—but very seldom will it be necessary if the foregoing expedients be fairly tried—and especially the *Actæa* and chloroform.

Not unfrequently the resistance to dilatation in the os uteri is of a spasmodic nature, termed spasmodic constriction. It is important to distinguish this from simple rigidity. The re-

sistance of the latter to dilatation is of a passive character, a kind of *vis inertiae*, so to speak, whereas the former is active. We may anticipate spasmodic constriction when we find the nervous system of the patient in a highly excited, sensitive condition, when she is very intolerant of her pains, and, perhaps, more particularly in subjects who have suffered from dysmenorrhœa of a crampy character. If then, upon examination, we find the edges of the os uteri thinned and tense, and very intolerant of the slightest touch, and, perhaps, at the same time, dry and hot, we may conclude the case to be one of spasmodic constriction. In simple rigidity the os is usually thick, soft and moist, and mostly manifesting no unusual tenderness.

When the difficulty is of a spasmodic character, as it not unfrequently is, Acetate of morphia, one grain 1st dec. trit., may be given in repeated doses, at not long intervals, until the desired effect is produced, or there is reason to believe that drug will not answer our purpose. Of course the repetition should be stopped short of narcotism. It needs not be apprehended that the above indicated dose will, in this state of things, arrest the progress of labor, or even produce narcotism, unless repeated with unreasonable frequency.

If Morphia, for any reason, good or otherwise, be deemed objectionable, we may try some of our remedies which we have found so valuable in rheumatic or neuralgic dysmenorrhœa, such as *Viburnum prunifolium*, *Xanthoxylum fraxineum*, etc. Where spasm is very plainly a feature of the case, arsenite of copper is worthy of trial. Chloroform, given by inhalation, is also here eminently applicable, and if Morphia have already been tried without success, this latter following it, will almost certainly succeed.

If rigidity of the perineum, after the head has come to rest upon it, interpose difficulty and cause delay, one of the very best remedies is to exercise patience, for sooner or later it will yield. We should be careful, however, not to stimulate the womb to unwonted action in this state of things. On the contrary, we should exhort the woman not to bear down—to control, by a strong will, the disposition there is at this stage of

labor to call the abdominal muscles into play to aid in the expulsion of the fœtus. If the perineum be very rigid and uterine action be very violent, we should always bear in mind that there is great danger of serious rupture. Gelseminum I have thought useful in rigid perineum. Some, I believe, commend Lobelia—I have never tried it, and therefore can say nothing certainly about it; but if its relaxing powers be not exerted short of nausea, it would be very objectionable. Chloroform extends its relaxing effects equally to this organ as to the os uteri. There is a method of manipulation which, I think, I have seen do much to hasten relaxation. The four fingers of the right or left hand are so arranged that they form, with their palmar surface, as they lie in close contact, side by side, a somewhat curvilinear line. They are thus introduced, in the absence of a pain, between the head of the child and the perineum, upon which it is resting. The perineum is thus gently stretched and held in a state of tension until the head, propelled by the next uterine contraction, is again forced down. The fingers are then withdrawn, leaving the head to keep up distension as long as the pain lasts. When the head recedes, the fingers are again introduced, and the same manipulation repeated as before. The rigid muscular fibres of the perineum are thus soon wearied out and lose their resiliency, so that the head is permitted safely to pass. I had long practiced this method upon my own responsibility, but lately see it referred to by others. Dr. Clay advises, with much confidence, to grease the perineum internally and externally with lard, and to apply long continued rubbing to the outside.

Where the cause of delay is a slight disproportion between the fœtal head and the parturient canal, we are again called upon to exercise patience. Here to stimulate the womb to more vigorous action, would generally be to expose both mother and child to unwarrantable risk. Time is required for the process, as in these cases there is a tight fit, so that the head is not free to obey the *vis a tergo* which urges it onward, and has not space to move away from the resistance opposing its descent. It gradually, however, under the propelling force, becomes moulded by the overlapping of the cranial bones, so

as to fit more loosely the diminished passage it must traverse. The passage, too, becomes more thoroughly lubricated by the secretions of its lining membrane, so as to facilitate the movement of the fœtus. By encouraging the patient, and thus keeping up her strength and spirits, she will usually triumph over the difficulty. It becomes us, however, to watch the case with the utmost care. If we find the powers failing,—unmistakable signs of the strength giving way, unless it be very near the close of labor, we should at once furnish the aid which art provides. The forceps should be introduced and properly and securely adjusted, and, if the symptoms are not urgent, we may, for the present, only give assistance during a pain, relaxing our effort when the pain goes off. When the womb finds itself thus aided and the sensation of the movement of the child is felt, it is, as it were, encouraged, and takes on more vigorous and successful action. The pulse and other symptoms should, however, still be carefully noticed, and if instead of resuscitated powers, we observe a still further decline of strength, delivery should at once be effected. Where there is extreme suffering in such cases, and there usually is, and no contra-indication present, we should at least suggest to the patient the use of chloroform, which, if properly given, will annihilate her sufferings.

When delay is caused simply by extreme sensibility to pain, we may try Coffea, especially if it be associated with general nervousness. If this fail, and we find the patient's peculiar sufferings are almost unbearable, and interfering with the progress of labor, we here again have in chloroform a precious resource. When the patient is brought under its influence, her extreme suffering generally ceases altogether, or is at least greatly mitigated, and labor, held in check by the controlling power of the will, resumes its normal course and goes on tranquilly to a fortunate close.

ABNORMAL LABOR ARISING FROM DEFORMITY OF THE PELVIS OF THE MOTHER.

The pelves of different women, as we have before said, vary in size—some are larger and some are smaller than that regarded as the normal standard. In fact a standard size may itself be considered as somewhat arbitrary. Properly speaking, a pelvis simply differing in size from that usually accepted as well formed, whether it be larger or smaller, so long as the different diameters retain their proper ratio to each other, cannot be called deformed. The necessary influence of such variation upon labor is simply, on the one hand to accelerate, and on the other to retard, but not in either case to arrest.

There are, however, pelves so far deviating from the normal in *form*, as to render a natural termination of labor exceedingly difficult or impossible, unless the diminutive size of the child counterbalances the obstruction. Such deviations are properly regarded as deformities.

Deformities of the pelvis arise from various causes, and present distinct forms. In early life rickets, and later mollities ossium may give rise to pelvic distortion. Bony growths and fractures may also be enumerated as causes of deformity.

Distortions of the pelvis may exist at the brim, in the cavity or at the lower strait or outlet.

Deformities at the brim are mostly caused by the promontory of the sacrum projecting unduly forward, and thus narrowing the entrance to the strait. Those of the cavity, by the sacrum being too straight, or, on the contrary, too much curved.

Those at the outlet or lower strait, by too close an approximation of the tubera ischiorum, or by the spines of the ischia projecting inwards, or by the bones of the coccyx having lost their mobility through extreme ossification. The first of these varieties is said to be the most common.

In addition to the foregoing deformities, the symphysis pubis may be depressed toward the sacrum or may be driven forward or elevated. M. Nægelè has pointed out a variety of deformity in which “the symphysis pubis is pushed to one

side, the sacrum to the opposite side, the pelvis is flattened on one side, bulging on the other; the oblique diameter on one side is shorter, than on the other longer than natural." To this deformity the term "*obliquely distorted pelvis*" has been applied. Yet another form of distortion is said occasionally to be met with, although rarely, to which the name "*funnel shaped pelvis*" has been given. In this case the upper strait is of the normal size, but the pelvic canal narrows downward to the lower outlet.

Professor Nægelè gives us the following external characteristics as frequently associated with, and therefore indicating, deformed pelvis. "The lower jaw projecting beyond the upper; the chin very prominent; the teeth grooved transversely; unhealthy appearance; pale, ashy color of the face; diminutive stature; unsteady gait; when the woman walks the chest is held back; the abdomen projects and the arms hang behind; there is deformity of the spine and breast; one hip higher than the other; the joints of the hands and feet are remarkably thick; curvature of the extremities, especially the inferior, even without distortion of the spine, is a very important sign; whenever the lower extremities are curved the pelvis is mostly deformed. It is well to ascertain also if, when a child, it was a long time before she could walk alone; whether she had any fall on the sacrum; whether as a girl, she was made to carry heavy weights or work in manufactories."

Professor Rigby tells us in reference to deformities at the brim that "besides the general appearance of the patient, we frequently find that the uterine contractions are very irregular; that they have but little effect in dilating the os uteri; the head does not descend against it, but remains high up; it shows no disposition to enter the pelvic cavity, and rests upon the symphysis pubis, against which it presses very firmly, being pushed forward by the promontory of the sacrum."

As it is very desirable in cases of deformity of the pelvis to be able to form a pretty accurate opinion not only of the particular variety, but of its degree or extent, various expedients have been devised for that purpose. Numerous instruments under the name of pelvimeters have been contrived for meas-

uring the width of the superior strait. Of these, so far as I know, that invented by Dr. Earle, of Birmingham, and that by Prof. Lazarewitch, of Charkoff, Russia, are most worthy of regard. The former consists of a pair of curved steel blades, so arranged that when closed the one lies within a groove contained in the other. A spring is so adjusted between the handles as to keep the blades closed, while by pressing upon the handles the force of the spring is counteracted and the blades opened. Each arm or blade of the instrument measures about seven inches. A scale graduated in inches is attached to the end of one of the handles which passes through a slit in the corresponding part of the other. This scale is furnished with a sliding self-registering index, by which the distance of the extremities of the blades from each other when separated is indicated. The instrument is introduced closed and carried up till the point reaches the promontory of the sacrum, when by pressure upon the handles the blades are separated till we have one resting upon the promontory, the other upon the os pubis, while the index points out upon the scale the distance of their separation and consequently the width of the upper strait. This in theory is very simple, in practice perhaps not always found so easy.

The instrument of Prof. Lazarewitch is more complicated, and probably could not be understood by mere description. It is applicable to both external and internal measurement of the pelvis, and not only to the superior strait but to the cavity.

British practitioners prefer the finger or such instruments as require the finger to perform the principal part in the operation. With the fingers unaided we shall probably be able, in most cases, to get all the information necessary for practical purposes. There are two principal methods by which we may employ this means of information. The index finger may be introduced, as in making a vaginal examination, the point is carried upward and backward, until it impinges upon the promontory of the sacrum, if that part can be reached. The dorsal aspect of the finger nearest the hand is pressed against the os pubis and the point of contact noted. Measurement from this point to the end of the finger will give us, not

exactly the width of the superior strait, but an approximation to it. It measures the hypotenuse of a triangle, of which the width of the superior strait constitutes the next greater side, and the width of the os pubis the third and smallest. The angle, however, contained by the two latter sides is not a right angle.

The other method, to which reference above is made, is to introduce all the fingers, or as many as the space will allow, into the pelvis side by side. When carried up so far that the points may be opposite the promontory, they are separated till one rests against that part, and the one on the opposite side against the os pubis. Measurement of the extent of separation of the points of the fingers will give us approximately the length of the conjugate or antero-posterior diameter of the superior strait.

When the promontory cannot be reached by the fingers introduced according to the first method, we may consider the upper strait as not much contracted.

In cases of deformity of the pelvis, no method of treatment can be given as universally applicable. Much will depend upon the degree of contraction, upon the size of the child, especially of the head, the more or less advanced ossification of the bones of the skull, etc. Our estimates of the degree of deformity by any of the means at our command, should be regarded, as we have said, rather as approximations than as calculations absolutely correct. The same may be said of the head in regard to its size, form and degree of compressibility. Nor can we absolutely decide as to the powers of the womb, or the degree of endurance of the patient. It is proper, therefore, that we should watch the case carefully and let the resources of nature have a full chance to do all in their power before we interfere, unless we are very confident, upon sufficient ground, that they cannot unaided accomplish their task. It is truly wonderful how great obstacles they will sometimes ultimately surmount. But should any unfavorable symptom be manifest as the herald of others soon to follow, we should be on the alert to act at the opportune moment. We should not suffer the woman to become dangerously exhausted while

we look on in culpable inactivity. Vigilance to discern the exact moment to act and promptness to embrace it, are essential to the proper discharge of our duty on such trying occasions. We should make ourselves sufficiently acquainted with the case before us to determine with precision the particular operation it demands, and then promptly, conscientiously and skillfully perform it.

Authors are by no means agreed as to the minimum space compatible with the passage of a living child. When the narrowing is but slight, but yet requiring instrumental interference, we can generally succeed with the forceps in effecting delivery, unless the head be very large or the cranial bones and sutures unusually ossified. In the case of a patient whom I attended some years ago in her first labor, and who has a somewhat contracted pelvis, I succeeded with the forceps in delivering a living child, without experiencing any great difficulty. It was a female child, of ordinary size for the sex. In her second labor I again attended the same woman, when the head, making little or no descent, I made several persevering but unsuccessful attempts with the forceps, until finding the patient's strength rapidly sinking, I opened the head. The perforation was very difficult, and I found, after delivery, the sutures nearly obliterated and the cranial bones of very unusual hardness. The child was a male, and of good, but not unusual size. As a general rule, where we do not detect very great narrowing of the pelvis, we should carefully and perseveringly try the forceps. But where we are unable to succeed with this instrument by applying a reasonable amount of force, I cannot think it our duty to persevere, to the great risk of the mother's life. I am aware that even violent, persevering efforts are sometimes ultimately crowned with success—both mother and child are saved, it may be contrary to all hope. But, on the other hand, the compression upon the child's head, necessarily or unconsciously exerted, frequently destroys its life, while the mother too often succumbs to the injuries she has sustained. In operations with the forceps in cases such as we are speaking of, the exercise of a discriminating judgment is necessary, aided by some experimental knowledge of the capabilities of that instrument, such as no mere didactic instruction can impart.

When the narrowing of the pelvis is such that we cannot succeed with the forceps without using unwarrantable force, some authors advise us to resort to turning. This of course supposes the head not to have engaged, or very slightly so, in the upper strait. The reason assigned for this procedure is, that the skull is narrower at the base than at the top, and may therefore be made to enter the superior strait as a wedge; that having done so, by virtue of the *vis a tergo* supplied by the womb, and the *vis a fronte*, by the hand of the operator, the head may more readily be moulded so as to pass, than when it enters by the top. Should, however, ossification have advanced so far as to prevent this, or should we from any other cause not succeed, we have the head in a far less favorable position for craniotomy than before turning was executed. The latter may, however, still be performed.

If, by turning, the larger part of the head be made to correspond with the wider part of the deformed pelvis, we shall probably gain an advantage. But we cannot, I think, easily foresee such a result with sufficient certainty before operating, even although possible, to calculate upon it with much confidence.

When however the deformity is so great as to reduce the diameter of the pelvis beyond a certain limit, both forceps and turning will fail. If the contraction be so great that a *living* child cannot pass, the forceps cannot be employed for its benefit, and in that case certainly not for the benefit, but at the great risk of the mother. Here craniotomy comes in, which of course sacrifices foetal life, if that be not already extinct, but if well executed is less hazardous to the mother than the forceps, where extreme violence would be necessary, even though it might succeed in extraction.

No very definite limit can be given beyond which it is impossible to deliver a living child. Attendant circumstances may greatly modify a particular case. The head may be unusually large, or it may be very small. Ossification may be far advanced, or the skull may be cartilaginous and yielding; the sutures may be nearly closed or obliterated, or they may be open and admit the free overlapping of the bones. It is manifest that under these different circumstances there may be a

very considerable range of limit, compatible with the birth of a living child. Dr. Meadows, one of the latest writers upon Midwifery, remarks: "As a general rule, it may be stated that the case is a fit one for the application of the forceps, if there be a conjugate diameter of from $3\frac{1}{4}$ to 4 inches; if less than $3\frac{1}{4}$ inches the forceps will be unsuccessful, but between that measurement and a conjugate diameter of $2\frac{1}{2}$ inches, the operation of turning will probably succeed; if there be less than $2\frac{1}{2}$ inches but more than $1\frac{3}{4}$ then craniotomy must be resorted to; but to perform this operation with any reasonable hope of success as regards the mother, there ought to be a clear available space of at least $1\frac{3}{4}$ inches; if the conjugate be less than that, then a mutilated child cannot, with safety to the mother, be extracted, and the Cæsarean section is our only choice. Some have thought that 2 inches is the narrowest through which a mutilated child can be extracted, while others have fixed one inch as the lowest."

When deformity of the pelvis has been ascertained sufficiently early, it has been advised upon very good authority, to forestall the inevitable difficulties that await us if labor be delayed till full term, by inducing it prematurely. This method has undoubtedly been often practiced advantageously as regards the mother, and not unfrequently saving the life of the child, which otherwise would have been lost. This is, however, an expedient not without its opponents, and, indeed, it may be asked what expedient has ever met with the approbation of all. It must be admitted that the induction of premature labor is not without its dangers to the mother, and does not always hold out flattering prospects of safety to the child. As regards the physician, if he succeed it is well, but if any disastrous results follow this operation, he is more likely to be subjected to censure than if such had been encountered at the natural close of gestation. If such a measure be contemplated, it is best for him simply to state its probable advantages, and leave the patient to make her own choice and take her own risks.

If the induction of premature labor be decided upon, it is a matter of no small moment to determine the best time for the performance of the operation. This will, of course, vary under

different circumstances, as, for instance, the different degrees of deformity that may exist. To quote again from Dr. Meadows upon this subject: "Supposing," says he, "a conjugate diameter of $3\frac{1}{4}$ to 4 inches, labor may be completed at the seventh month, with no other operation than is necessary for its induction; if the conjugate be not less than $3\frac{1}{4}$ inches then forceps will be applicable at the same period; from $3\frac{1}{4}$ to $1\frac{3}{4}$ inches, turning will probably succeed at the seventh month; but if the diameter be less than $1\frac{3}{4}$ inches, nothing short of craniotomy will suffice, even at this early period of gestation."

DEVIATIONS FROM NORMAL LABOR HAVING THEIR ORIGIN IN THE CHILD.

Deviations from the natural or typical form of labor, attributable to the child, may arise either from some abnormal condition appertaining to it, or from its relation to the pelvis of the mother in regard to its presentation or position at the time of labor.

Under the first of these divisions we may notice the extraordinary general size of the foetus. The cause of this extreme intra-uterine growth cannot usually be assigned; but it may sometimes be ascribed to the vigor of one or both parents, especially the mother, or it may, perhaps, occasionally be owing to the child being carried longer than the ordinary period of gestation. There can be no doubt but that labor is in some instances considerably postponed beyond the usual epoch. Some women think they habitually carry their children ten calendar months. Extreme cases are quoted even in excess of this period. It is to be presumed, where the mother is vigorous, that the child still continues to increase in size up to the time of its birth, and in any given case will, of course, be of larger size at the close of ten months than at the expiration of nine. The degree of deviation from normal labor, caused by excessive growth of the foetus, will much depend upon the vigor of the mother and the conformation of the parts concerned in parturition. If she be strong and well formed, having a wide pelvis and moderately yielding soft

structures, the size of the child will modify labor in no other way than by causing a little delay and more or less additional suffering. It will ultimately terminate unaided, with perfect safety to both mother and child. But on the other hand, if the woman be feeble, lacking courage or possessing a pelvis below the standard size, even short of deformity, labor may not only be protracted, but require the assistance of art, or even end disastrously to mother or child, or both. On the part of the mother we may look for extreme exhaustion, sometimes even fatal, rupture of the womb, of the perineum, or post-partum flooding, owing to failure of the womb to contract after delivery. Fortunately, however, excessive growth of the fœtus during intra-uterine life is rare, and where it occurs, its ill effects are mostly counterbalanced by the possession of rare parturient powers on the part of the mother.

More frequently, perhaps, we meet with cases where the general size of the child is not extraordinary, but some particular part is abnormally developed. The head, for instance, may be so large as to prevent its entrance at the superior strait, or, if it enter, its passage through the excavation of the pelvis may be much retarded, or possibly even arrested. This abnormal size may be owing to monstrosity, but more commonly, perhaps, to effusion within the cranium.

Again the abdomen of the child may be enlarged much beyond the natural size, through a collection of fluid within its walls, the result of intra-uterine ascites. The child, it will be recollected, is subject to various maladies before, as well as after it is born. Dropsical effusions may also take place in other situations, directly or indirectly complicating labor. I was once called to a case in which, upon my arrival, I found the os uteri fully dilated, but the pains were feeble. After waiting for some time without any improvement in uterine action, I administered small doses of the tincture of Ergot. The womb very promptly responded in a very satisfactory manner, the pains becoming vigorous, but of the usual intermitting character. The pelvis was well formed, and there was no apparent impediment to the satisfactory progress of the labor. The membranes were artificially ruptured at the proper

time, but the head showed little disposition to enter the upper strait. Upon examination I found little or no flexion; instead of the vertex, the top of the head presented. By means of the fingers pressing upon the forward part of the head or longer arm of the cranial lever, I compelled flexion during the contraction of the womb, and by this means the presenting part was enabled to enter partially the superior strait. But very soon all progress was arrested, although the action of the womb was still vigorously maintained. Symptoms of exhaustion on the part of the mother becoming manifest, delivery was effected with the forceps, and as the head had neither flexed nor rotated, one blade rested upon the forehead and the other upon the occiput. As soon as the child was born, the cause of the difficulty was clearly apparent. A large collection of fluid had formed immediately beneath the chin, completely filling up the whole space between that part and the thorax, and by its tension entirely preventing flexion of the head, unless compelled by considerable force. This large collection of serous fluid gave to the child the appearance of hopeless deformity, but entirely disappeared in the course of the first night. An unusually large amount of urine was evacuated, and with it the tumor disappeared.

Another case occurred to me in the same neighborhood, which, although not exactly similar, may be mentioned in the same connection. When I reached the bed-side I found the labor had been at a standstill for some time, although the pelvis was well formed and uterine action very vigorous. Upon examination I detected the brow presenting and the head arrested through want of a proper correspondence of diameters. The mal-position was, however, easily corrected, and this being accomplished, the child was soon born. Upon examination I found a singular redundancy of integument beneath the chin, preventing due flexion, as in the preceding case, and undoubtedly leading to the unfavorable position mentioned above. This slight deformity eventually disappeared, but not so suddenly as that in the former case.

Monstrosity of the child in some of its parts, from abnormal development, is occasionally encountered, causing a greater or

less deviation from normal labor, according to its kind and degree. Omitting to notice such deformities as do not modify labor, we sometimes meet with duplications of the members of the child, as of the upper limbs. Sometimes the fœtus will be found having a double head. A case of this kind occurred to Dr. Pfeiffer, of this county (Adams, Pa.), many years ago. The child was delivered without separation of its parts, and exhibited in the city of Philadelphia and elsewhere. The case is referred to by Dr. Hodge, in his work on Midwifery, as related to him by the late Dr. C. D. Meigs. Two fœtuses are sometimes found connected together, and this is said to be the most frequent form of duplication. Of this, the Siamese twins, now lately deceased, furnish a striking example. "The union may be either by the abdomen, the side, or the back, or more rarely by the head. I have in my possession a photograph of two children who were joined together at the top of the head, end to end as it were." (*Meadows' Manual of Midwifery*, p. 334).

Two girls, Millie—Christine, lately on exhibition in Paris, were examined by MM. Tardieu and Robin, by order of the authorities, and the result reported to the Académie de Médecine. "The girls, 22 years of age, are united at the sacrum. The upper portions of the body are separate; they have two hearts, which do not beat in unision, and the radial pulse in the two is not isochronous, while there is complete synchronism in the pulsation of the lower extremities in both subjects. The sensibility of the upper limbs is distinct and separate in each subject, while any impression on the lower limbs is felt at the same time by both subjects. MM. Tardieu and Robin endeavored to persuade the girls to permit an examination of their pelvic region, and one seemed inclined to assent, but the other most indignantly refused, showing each had her own independent will."

Another cause of deviation from normal labor, which may be properly spoken of in this connection, is the presence of more than one fœtus within the womb at the same time. There may be two or three, and it is even asserted there are occasionally four or five. Twin births are not very uncommon, vary-

ing somewhat in the course of different years, and very considerably in different countries. Thus they are said to occur in England about once in $76\frac{1}{2}$ cases; in France, once in 108 cases; in Germany, once in $81\frac{1}{2}$ cases. I am not in possession of statistics to speak of their frequency in the United States, but if I may be allowed to judge from the results of my own practice, which has been altogether private, I would suppose the ratio to be quite as high as any of the foregoing. Triplets are of much less frequent occurrence. In England they are said to be met with only once in 6,000 cases; in France, once in 6,568 cases, and in Germany, once in 8,454 cases. Plural births are said to occur more frequently in Ireland than in any other country.

The presence of more than a single fœtus does not necessarily seriously complicate labor, although, in general, it at least retards delivery. In cases of this kind, especially if triplets, the children are small, and therefore meet with less resistance in their passage. But, on the other hand, these cases combine several elements of delay. The womb is necessarily over-distended, and, as we have already seen, its powers of contraction are thereby greatly diminished. The propelling force, moreover, which it exerts, is indirectly applied to the presenting fœtus, often acting only through the other child or ovum. It is, from the same cause, often misdirected from the proper line of propulsion. The infants do not generally both present in an equally favorable manner, and not unfrequently the one lies in the way of the other's egress. I remember a case where, upon my first examination, my finger impinged upon the thorax of the first child, a presentation distinctly made out by the presence of the ribs. Here, as both fœtuses were of good size, delivery by the unaided natural powers was perhaps impossible.

In plural births the first stage of labor is usually considerably retarded, but when one child is born the other generally soon follows. This happens in the first place, because in plural births the infants are, as we have already said, mostly smaller than in single, but principally because the parts are so completely dilated by the birth of the first child, that there is but little resistance to the passage of the second.

So fortunate a result, however, is not uniform. On the con-

trary, the birth of the second child is sometimes postponed for hours, and even days, if left to nature alone, and such delay is generally fatal to its life. According to Dr. Collins, "experience has shown that the second child is very likely to be still-born, if left longer than two or three hours unassisted."

Another circumstance connected with the child which may cause parturition to diverge somewhat from its normal course, is the occurrence of its death some days before labor has set in. We need not stop to inquire how such an accident may happen—it may be from defective nutrition, from disease, or from external violence upon the person of the mother. Whatever the cause the effects are the same.

Some have denied that the previous death of the fœtus has any effect whatever upon the subsequent labor. Probably sometimes it has not. When the child has gradually pined away, from mal-nutrition, or chronic disease from any cause whatever, and has therefore attained but a very imperfect growth, it will find but little resistance in passing through the parts of the mother, and may therefore be speedily born. But if fully developed, and of a large or good size, the case will be different. A dead fœtus manifestly has not the firmness and resiliency of a living one. The spinal column lacks the stiffness necessary to receive and transmit the propelling force to the part in advance, and hence it does not favorably progress. The flaccidity of the whole body causes it to spread under the force of the womb, and to fill up and crowd the cavity of the pelvis, which necessarily interferes with its free passage. If, moreover, the head lack the usual firmness, as we think it generally does, when the fœtus has been for some time dead, it fails to dilate the os when it comes to press upon it, as the head of a living child is found to do. The resultant of these different causes is delay—a prolongation of labor beyond the limit necessary for the birth of a living child of equal size.

In pointing out the treatment of the foregoing deviations from normal labor, we will notice them in the order in which we have taken them up. The difficulty arising from the unusual size of the child, generally being greater suffering and longer delay in the labor, will mostly be surmounted by the

natural powers alone if the woman be well formed, vigorous, courageous, and endued with the power of endurance. Such cases are, however, exceedingly distressing to witness from the vast amount of suffering they entail. The humane physician should never allow himself to look on such suffering with indifference, if he can in any legitimate way do anything to mitigate it. Something may here be done by his confident and yet sympathizing demeanor toward the patient; by his assurance of her ultimate triumph; by his busying himself in doing, or at least seeming to do, everything that can be done to make her comfortable; by diverting her mind between her pains from her sufferings and occupying it with pleasant subjects; by using all the little appliances that may really tend to her comfort, such as pressing upon the back or sacrum, sustaining with the hand the walls of the abdomen during a contraction; giving her something to grasp with her hands, etc. All these measures to some extent do good, and yet such is sometimes the inconceivable agony of the woman, especially of the primiparous woman, that we must excuse her, if in the midst of all this, she turn to us with the exclamation, "miserable comforters are ye all."

If symptoms develop themselves in the course of the labor corresponding with our knowledge of the power of homœopathic remedies to relieve, we should by all means at once administer them. If these means fail and if the sufferings of the patient be unbearable, I hope I may be pardoned for saying *most positively*, that if no very manifest contra-indication be present, we should give her chloroform to the *complete relief* or at least *great mitigation* of her sufferings. Pain is itself an evil, and a great one, but I am not as yet convinced that chloroform in this relation of it is. We do not hesitate to give it to a woman under the knife, in the operation of ovariectomy—and without it, I do not know that the sufferings of the patient would be more excruciating than those of the woman in the severest forms of labor. They would at least, generally, be of shorter duration. Under the influence of this agent, if its administration has not been too long delayed, the excitement of the patient gradually and beautifully subsides,

the expression of agony upon the countenance gives place to one of calm placidity, the passages become relaxed, the mucous surfaces lubricated by an abundant secretion, the quick, irritated pulse returns to nearly the normal standard, and the labor is generally found to progress more in one hour than it had done in many hours before. These results I have too often witnessed with inexpressible delight for any man to convince me that it is all a delusion, and have too frequently seen the patient make a speedy and perfect recovery to be persuaded by any sophism that I have killed or injured her by the operation. We think, too, the use of chloroform lessens the liability to the worst consequences sometimes following long compression of the mother's tissues. By obtunding the sensibility of the parts there is less irritation, consequently less afflux and less congestion, and therefore less danger of inflammation and sloughing.

If we find the patient's powers likely to prove inadequate to the task, especially if we discover any signs of sinking or collapse, and before this proceeds to a dangerous extent, we should apply the forceps if the head present, and if the breech, adopt such measures as will be pointed out when treating especially of that presentation.

The forceps might be introduced, properly applied and locked, not with a view to immediate delivery, but to assist during a pain, the efforts of the womb. In this manner delivery may be gradually effected and the head have time to mould and accommodate itself to the passages, and these latter gradually to dilate and thus more readily permit its transit.

In cases of unusual size simply of the head, the same measures as above will generally be found applicable. Here if the powers of the womb prove inadequate, the forceps must be resorted to before, and long enough before, the patient sinks into collapse. We should remember, too, if the action of the womb be violent, that there is great danger of the rupture of that organ. If the forceps fail from advanced ossification of the cranial bones, or even from the size of the head being such that we feel convinced it cannot pass, there is then no alternative but a resort to craniotomy. If, however, the extraordi-

nary size of the head depend upon hydrocephalus, which may mostly be detected by the openness of the sutures and its general compressibility, if we do not or are not likely to succeed with the forceps, or if the instrument be not adapted to the case on account of the head being so much enlarged that it does not enter the upper strait, we may discharge the contained fluid by means of a trocar, and afterward extract. Turning is advised by some in cases where there is a possibility of preserving the life of the child when an attempt with the forceps has failed, and when the head has not descended so far into the pelvis that it cannot be pushed up so as to allow the feet to be brought down. The grounds upon which preference for this operation rests, are elsewhere stated. It is, however, generally doubtful whether turning will succeed if the forceps do not, and if after performing version we fail to extract the head, we ensure the death of the child as well as increase the risks of the mother. In such case we are obliged ultimately to resort to craniotomy, and we have placed the head, as has been before remarked, in a position far less favorable to the performance of this operation than it was in before. The operation is now not only more difficult to perform, but its execution probably imperils the structures of the mother considerably more than when the top of the head presents.

Enlargement of the abdomen through fœtal or intra-uterine ascites is of rare occurrence, and hydrothorax or enlargement of the chest through dropsical effusion within its walls is said to be still more so. To quote from Cazeaux, "The signs indicative of dropsy of the chest, are a considerable enlargement of the thorax, a widening of the intercostal spaces, and an evident fluctuation in these enlarged intervals. On the contrary the extraordinary size of the belly, the distension of its walls and the fluctuation detected there, characterize ascites." This is all simple enough, and yet when a fœtus possessed of either of these abnormalities, is crowded into the pelvis of the mother, it may be difficult to ascertain the facts necessary to a certain diagnosis. If, however, the descent of the head, while the thorax or abdomen refuse to enter the pelvis, leads us to suspect either of these diseased conditions in the child, we

should spare no pains to ascertain the truth. But let us hear M. Cazeaux still further, for we can perhaps consult no better authority. "The fœtus being retained by the amplitude of one or other of these cavities, is arrested in its progress through the pelvis, and the accoucheur finds the excavation filled up by a large fluctuating tumor. In some cases of extreme distention of the abdomen, the walls of this cavity have been found to yield, so that a great part of the tumor remained above the superior strait, whilst the rest of the trunk gradually descended into the excavation; and when one portion of the abdomen had reached the exterior, the liquid gravitated towards this point, where the resistance was less, the portion remaining internally progressively diminished in volume, and the labor terminated naturally." Some provision like the foregoing will probably be found often to supply the needed aid in such cases.

If, however, after giving the natural powers sufficient time, and even aiding them by traction cautiously applied, we find the child cannot be born, we are advised to puncture the thorax or abdomen and discharge the fluid contained therein. This should be done by means of a small trocar, and done carefully, so as to give the child whatever chance for life its diseased condition may have left to it. There are several cases reported by M. Depaul in which an enormously distended bladder simulated ascites, and he is of opinion that the latter condition is often mistaken for the former, which he thinks is very rare. Where distension of the bladder prevents delivery, the puncture of this viscus will also be necessary, and should be done as nearly as practicable according to the rules laid down in works on Surgery for the performance of the operation upon the adult.

In cases of dropsical effusion into the cellular tissue, beneath the chin and in front of the neck, such as the one I have above detailed, I can think of no other or better management than that adopted, namely, delivery with the forceps. In such cases, where the head has come within reach, and unflexed, especially if it be of large size, it would be, I apprehend, very difficult by the sense of touch to ascertain the exact nature of

the case, and even if made out, very hard to discharge the fluid by means of an instrument. The plan adopted was successful—the child is still living, and by far the brightest of the family. The objection to the use of the forceps in this case was, that the head being transverse and unflexed, one blade of the instrument must necessarily lie over the eyebrows and nose, endangering contusion of those parts. As the head did not undergo flexion or rotation in its descent, it must have brought its occipito-frontal or long diameter into correspondence with the transverse, or short diameter of the lower strait. There was, therefore, danger of the injurious compression of the intra-pelvic soft structures of the mother. Something of this kind probably did occur, for the patient suffered for some time with pain in one of her lower limbs, which did not, however, set in till some days after delivery. Otherwise she made a good recovery.

No general rule applicable to all varieties can be given for the management of labors in cases of monstrosities. When the monstrosity consists in a deficiency of the natural parts of the fœtus, it does not complicate the process, and therefore requires no treatment different from normal labor. But where there are redundant parts, the case may require a greatly modified management. Even here, however, the child may be small, so that it may be born even with two heads, by the natural powers. If not, when one head is extruded, it may possibly be turned out of the way while the other is brought down. If this cannot be done, the one head may be removed by decapitation, and the remainder of the child delivered either by the natural forces, or with such aid as may best suit the case. It is the mother's safety alone that is here to be taken into the account, for such a monster is incapable of prolonging life, even though delivered entire. Where two fœtuses united are born alive, as the Siamese twins, they are probably small, and pass side by side.

The treatment of cases of plural births, so far as it differs from normal labor, is for the most part very simple. If, upon examination, we find the presenting child in such position that it cannot be born through the natural forces alone, as soon as

the os uteri is sufficiently dilated we should render the assistance necessary. If the shoulder for instance present, we may perhaps succeed in correcting the mal-position by external and internal manipulations conjoined, as elsewhere in this work more particularly described. If the side or back of the child present, turning will be necessary, to remove it out of the way of the other. If the womb be not in vigorous action, it will perhaps be better simply to turn, and leave the further process to the natural powers, stimulating the womb, however, with Ergot in repeated doses at short intervals, till it responds in a satisfactory manner. It should be a rule in plural labors never to be forgotten, not to empty the womb suddenly, unless it be in very vigorous action. If this be neglected there is great danger from the over-distension and consequent atony of that organ, of bringing on very dangerous hæmorrhage. Should this accident occur from any cause whatever, it should be promptly treated as directed in another place.

After the first child is born, if the womb do not very shortly resume its action, we should use means to arouse it, as too long delay—as we have already intimated—may be fatal to the second child. Our first efforts toward this object may be simply frictions with the hand over the region of the womb, a measure which will often succeed in awaking that organ to renew its efforts and finish its task. Should this fail we have the Ergot to fall back upon. When the pains set in vigorously we may rupture the membranes of the remaining sac, which will accelerate the birth of the fœtus. Where there are two or more fœtuses present at once in the womb, usually each one has its own placenta, independent of the other or the rest. We should never, however, attempt to remove the placenta of the first born until the birth of the other has taken place. To do so would most likely be productive of very severe, if not fatal hæmorrhage, and sometimes cause the death of the unborn child. It occasionally happens when one fœtus presents by the head and the other comes down by the feet, that the chin or occiput of the latter locks upon the corresponding, or at least some part of the head of the former, so that neither can pass. When this unfortunately occurs, we may try to push up

the presenting head, and if we can succeed in doing so, we may deliver the other by the feet. This manœuvre failing, our only remaining resource will be to separate the head of the one whose feet have come down, and push it out of the way, so as to permit the presenting head to come down. When this child is born it will be our concern to deliver the decapitated head, yet remaining in the womb. If the head be small and the passages well dilated, we may succeed in doing this with the unaided hand. But should we fail in this manner, we will probably find the following appliance enable us to succeed. A piece of thin, well-dressed and soft calfskin, such as is usually sold under the name of "whang leather," of such a size that the central portion, after it is prepared, will be sufficiently large to surround the fœtal head as a cap. With a knife cut out from the border of what is designed to be left as the central portion toward the margin of the whole piece, so as to give the whole a star-like shape; the rays, when it is finished, will be straps emanating from the margin of the circular central part. This, when well lubricated, can be carried up with the hand, and a portion of the straps thrown over the head and drawn down, while the others can be retained on the opposite side.

Now if all these straps be collected in one hand and gently drawn, they will bring the central or uncut portion of the leather to surround and enfold the fœtal head. By drawing upon the straps with a waving force, the head will be extracted and so protected that its projecting bones will not wound the tender tissues of the mother.

To prevent awkward and discreditable mistakes, we should, in every case of labor, carefully examine the womb by external pressure, after the birth of the child, to ascertain if there be another still undelivered. This we may easily determine, unless it might be possible to mistake where the patient has a great deal of adipose tissue upon the walls of the abdomen, and the fœtus be very small. The irregularity of surface presented by a remaining child will readily distinguish it from the globular form of the contracted womb, which is usually felt shortly after delivery.

The slight deviation from normal labor occasioned by the

death of the child some time previous, requires but little modification of treatment. If the collapsed condition of the head cause delay in the dilatation of the os, if deemed necessary, this may be hastened by the use of Barnes' dilators. If the labor should prove so tedious that the patient's strength is likely to become exhausted, the forceps should be used or craniotomy performed if better indicated, for here the mother's safety is the only object in view—the child being manifestly of no account.

DEVIATIONS FROM NORMAL LABOR ARISING FROM UNFAVORABLE PRESENTATIONS OF THE FŒTUS.

We have seen that in what we have selected as the normal type of labor, not only is the head the presenting part, but the vertex or top of the head is found lowest, and is the part upon which the finger impinges in making the usual examination. This presentation is not only the most simple, the most favorable to delivery by the natural powers alone, but it is by far the most frequent. Under circumstances, however, favorable to such deviations, almost any part of the fœtus may present. But such cases are exceptions to the beautiful simplicity whereby nature accomplishes her purposes in the process of parturition.

Upon making a vaginal examination in a given case of labor, we may satisfy ourselves that the fœtus lies in an inverted position in the womb, that is, that the head is lowermost; but we cannot infer from this with certainty that the vertex will present. Instead of the head entering the upper strait, flexed, with the chin nearly approaching or resting upon the thorax, it may depart therefrom at its entrance, or extension from some preexisting cause may, in exceptional cases, have taken place prior to the commencement of labor. In either case, as labor advances, the chin departs more and more from the chest, and the occiput is necessarily thrown further and further backward and approaches nearer and nearer to the upper part of the back or posterior plane of the fœtus. This gives rise to

a) **Presentation of the Face.**—It is probable that nearly

all face-presentations are originally presentations of the vertex. That is, before the membranes are ruptured and the head attempts to enter the strait, flexion already exists, and it is ready to descend in the usual manner with the vertex in advance. But from the direction of the propelling force, the shape of the pelvis, or that of the head, the occiput encounters resistance, while the forehead is free to move. The propelling force continuing to act, is expended upon or communicated to the longer arm of the cranial lever, which, obedient to the impulse, moves in the direction of least resistance, carrying the chin more and more remote from the thorax, and consequently leaving the occiput still further behind it. It is manifest that the more the head advances under these circumstances, the greater will be the resistance with which the occiput will meet, and consequently the more firmly it will be pressed upon the posterior surface of the chest. As the atlanto-occipital articulation in the fœtus admits of much freer movement than in the adult, this will bring the face nearly or directly downward, constituting a face-presentation.

Similar to the foregoing is the explanation given by Dr. Barnes. "A force," says he, "which is generally unnoticed in obstetrics, is *friction*, and if friction were uniform at all points of the circumference of the head, it would be unimportant in a dynamic point of view to regard it. But it is not always so. Friction at one point of the head may be so much greater than elsewhere, that the head, at the point of greatest resistance, is retarded, while at the opposite point the head will advance to a greater extent, or resistance at one point may quite arrest the head at that point. In either case the head must change its position in relation to the pelvis."

"Let us then take the case where excess of friction bears upon the occiput, directed to the left foramen-ovale. This point will be more or less fixed, while the opposite point or forehead, receiving the full impact of the force, propagated through the spine to the atlanto-occipital hinge, will descend—that is, the forehead will take the place of the vertex and be the presenting part. If this process be continued, the head rotating back more and more upon its transverse axis, the face succeeds to the forehead."

As the most successful management of face-presentations depends upon our detecting them before the head descends so far that they cannot be rectified, it is of the utmost importance that we should be familiar with the characteristic symptoms by which they may be made out.

Before the membranes are ruptured the diagnosis is not easy. The head is generally high, and if the membranes be tense, it is not easy to reach the presenting part. As reversion is not yet completed, if the presentation be reached at all, the finger impinges upon the forehead, which may be mistaken for the vertex. But if the membranes be lax or ruptured, the diagnosis becomes more easy. By careful examination we can detect the nose and eyes, the first a well-marked elevation terminating abruptly, with two openings—the nares, the latter, depressions surrounded by bony margins or rims, distinguishing them sufficiently from anything else. The mouth may be felt, characterized by the gums or solid alveolar process. This will, one would suppose, sufficiently distinguish it from the anus, the only opening for which it could be possibly mistaken. Velpeau, however, tells us of a French professor who just after making an examination of a patient in labor, and who supposed he had introduced his finger into the mouth of the fœtus, pronounced the case to be a presentation of the face, and boldly asserted the impossibility of his mistaking a breech-presentation for a case of this sort, while, to the great amusement of his class, his finger was seen to be covered with meconium. Careful reflection will, however, we think, prevent such mistake—the opening of the mouth surrounded by solid structures, the anus soft and probably resisting the introduction of the finger. The sensation of suction is said sometimes to be felt upon introducing the finger into the mouth.

The diagnosis is, however, more difficult when the presenting part is crowded down into the pelvis in a more advanced stage of labor. But it is then usually too late to do anything effectively in correcting the mal-position. As it is then the best we can do to wait and give nature fair play, we can take time for fully considering the case without causing any detriment to our patient. By careful and deliberate examination

and due reflection upon the result, we shall be able to make out the true state of the case in time enough to be ready to render the necessary aid.

Cazeaux admits "two fundamental positions of this presentation; in one of which the chin looks toward some point on the right lateral half of the pelvis, the *right mento-iliac*; and in the other it is directed to one of the points on the left lateral half; the *left mento-iliac* position; "and we may repeat," says he, "for the face what was said concerning the vertex-presentations, namely, that there is no portion of the circumference of the superior strait with which the chin may not be in relation at the commencement of labor; nevertheless we shall include all these shades of position in the three principal varieties of each side; that is, for each fundamental one, we have the *anterior*, the *transverse* and the *posterior* varieties."

The opinions of authors vary considerably as to the difficulty created by face-presentations, especially where the chin finally turns backward in relation to the pelvis. Dr. W. Hunter, in his MS. Lectures, as quoted by Dr. Meadows, remarks: "In this case I do not turn the head around, in order to deliver, but nineteen times in twenty leave it to itself to come as it will." To this Dr. Meadows adds, "The same opinion is expressed and the same practice adopted by most English authorities." And further still the same author continues, "As a general rule no *treatment* is required in the management of face-presentations; for beyond a somewhat protracted first stage and a little more pain to the mother, these cases mostly do well." On the contrary Dr. Barnes tells us that some of the most difficult cases to which he has been called in consultation were cases of presentation of the face. Of course very much will depend upon the size of the child, especially of the head, the shape of the latter, amplitude of the pelvis, etc.

If we be present before the face enters the superior strait and detect this presentation, we should by all means seek to correct it. We have already remarked that by far the larger proportion, if not all these cases were most probably presentations of the vertex; that they have been changed by the vertex or occiput meeting with resistance in its descent greater

than that encountered by the forehead, in consequence of which the former was retarded or arrested in its progress, while the latter, free to move, advanced and took the place of the vertex. Now if we can reverse this state of things, we shall overcome the difficulty. By introducing two fingers of the hand, of which the palmar surface will most readily apply to the forehead or the clin, according to the degree of extension which has already taken place, and with the points of them pushing it up, while, if practicable, two fingers of the other hand, or a lever, are hooked over the occiput, so as to draw it down, we may restore flexion and thereby change a forehead or face-presentation into one of the vertex. Here, by means of the fingers, we more than counterbalance the resistance which the occiput has encountered, by creating resistance to the descent of the forehead, while we enable the occiput to overcome that which detains it, by applying additional force. If flexion be thus restored and maintained until the vertex enters the upper strait, and if the action of the womb be energetic, we may leave the labor to be completed by the natural powers. Attempts to rectify the presentation in the early stage of labor, have the approbation of some of the most eminent accoucheurs. "If the practitioner be called early," says Dr. Hodge, "and recognize a face-presentation, after the os uteri is dilated and before the presenting part has passed this opening, the author thinks that in all cases it would be best immediately to resort to *version by the vertex*. For under the circumstances just mentioned, especially in multiparous women, the operation can be easily and rapidly performed without much suffering to the mother, and will effectually deliver the child and its parent from all the unpleasant incidents, delays and even dangers of facial presentations." "Now," says Dr. Robert Barnes, "if we can transpose the greatest friction or resistance to the forehead, and still maintain the propelling force, it is clear that the occiput must descend and that the normal condition may be restored."

The author, however, last quoted, admits of cases where such a fortunate result could not be reached. "In some," says he, "the face will not enter the brim," and then asks, "What

shall we do here?" The application of the forceps under these circumstances he thinks attended with peculiar difficulties, and advises turning by the feet or podalic version as holding out a better prospect to both mother and child.

It will often happen, however, that we do not reach the patient in time to effect a rectification of the mal-presentation. The face has already entered the pelvis and descended too far to leave any hope of pushing up the chin and bringing down the occiput, or in other words of producing flexion. An important question then is, what shall we do?

In by far the greater number of cases, the head in descending will so rotate as to bring the chin toward the symphysis pubis, and ordinarily the natural powers after some delay and the suffering of additional pain, will effect delivery. Should, however, symptoms of approaching exhaustion manifest themselves the forceps should be used. The application of the instrument here does not materially differ from that in ordinary cases. "When locked traction is at first directed downward, to get the chin fairly under the pubic arch. Then the traction is directed gradually more and more forward and upward so as to bring the vault of the cranium out of the pelvis. The posterior part of the head puts the perineum greatly on the stretch. It requires great care to extract. Give time for the perineum to dilate. Extract gently."—*Barnes' Obstetric Operations*, p. 86.

As the position is so much more favorable when the chin turns forward, although in obedience to the great mechanical law we have elsewhere stated it generally does so, we should carefully watch the descent, and if we suspect danger of its turning backward (or if it do not in due time turn forward) we should attempt to correct that tendency by a counteracting resistance judiciously applied by means of the fingers or a blade of the forceps—by interposing such *resistance* as will direct it forwards. The fingers will answer best if there be sufficient space, if not, a blade of the forceps.

Prof. Penrose details a case in the American Supplement to the *Obstetrical Journal of Great Britain and Ireland*, in the management of which he very successfully resorted to the

method here recommended. The expedient occurred to him after he had twice unavailingly tried the forceps, as it had done to me a considerable time ago. He simply applied and held a blade of the forceps against the side of the child's face which was turned backward. This furnished the resistance, shunning which, under the powerful action of the womb, the chin immediately turned under the symphysis pubis, and the head was speedily delivered. It was an application of the law "A body acted upon by a force and free to obey the impulse, moves in the direction of that force, and when it encounters resistance, in the line of least resistance." The difficulty here is that the face cannot reach the floor of the pelvis, otherwise it would there encounter the resistance necessary to effect the rotation of the chin. In cases where the chin spontaneously turns forward "*at the last moment*," the result is probably owing to the presenting part having reached the floor of the pelvis through the powerful action of the womb.

But if after all the chin turn backward or we are called to a case so late that we had no opportunity to prevent this unfortunate occurrence, what shall we then do? We are told by some that even here the child may, and in a great proportion of cases will be born by the natural powers. Others again assert the contrary. The late Dr. C. D. Meigs, if we remember rightly, taught his classes that it cannot. Dr. Barnes says: "The birth of a full grown living, or recently dead child, with the forehead maintaining its direction forward, is almost impossible." In cases where the child is small and the pelvis spacious, and especially when in conjunction with these circumstances the uterine action is powerful and persistent, the face is likely to be so far driven downward as to reach the floor of the pelvis. When this occurs, it there meets with a resistance competent, at least in some cases, to rotate the chin forward, under the symphysis pubis. This favorable change having taken place, the labor is usually terminated by the natural powers. Under the opposite circumstances the child cannot be born without the aid of art. These considerations probably account for the great discrepancy of opinion upon this subject. The forceps here, when the child is of ordinary size, is scarcely

available, because, in drawing down the head, we draw down also the shoulders and thorax, as it were alongside of it, and greatly increase the compression.

Turning by the feet is usually impracticable when the head is low; if it can be effected it ensures delivery, but generally with the loss of the child and often mother too.

Some advise forcibly turning the chin around, by means of the forceps, so as to bring it into relation with the symphysis pubis. When it is fully turned backward, there is danger of breaking the child's neck by this operation, unless very carefully executed. It may possibly, however, be gradually coaxed round without this accident, and if once turned the case may be treated as one of anterior position of the chin originally.

When turning the chin around is impracticable, or for any reason judged improper, and when after waiting, it does not turn spontaneously, as it sometimes will do, even at the last moment, it may be possible by elevating it and depressing the perineum, to draw it over the latter. The forceps may be advantageously used in this operation. Careful stretching of the perineum in the manner I have elsewhere indicated, may also considerably contribute to our success. If this can be accomplished, the lever may be applied to the occiput so as to draw it downward and backward, thus restoring at least partial flexion, by which means the head may be delivered.

Should all these expedients fail, as well as the resources of nature, craniotomy may be resorted to, but with far less assurance of easy delivery than when performed in cases of vertex presentation. When it is deemed necessary to resort to this operation, we should be careful to perform it in time, before the mother's powers are so far exhausted as seriously to jeopardize her life. Neglect in this matter we fear is too common, in cases generally requiring such instrumental aid, and there is reason to believe many mothers die either immediately from shock, or later from want of power to recuperate from the extreme prostration of long continued suffering. Craniotomy is extremely repugnant to the physician, and attended with grave responsibilities, especially if he be not well assured that the child is already dead. Hence consultations are generally pro-

posed, which, in large towns and cities may not cause much delay, but in rural districts require much time to arrange. Hence, often by the time the parties are assembled, the patient is beyond their combined skill to save. It should be remembered the mother's interests are paramount to those of the child, and if either must be sacrificed it should be the latter. We would not, however, be understood to advocate precipitancy. The condition of the patient should be carefully watched, her former state of health taken into the account, and her general powers of endurance fully considered. So long as her strength holds out, and she manifests no signs of sinking, let nature have fair play to do her best. But whenever signals of distress are hung out, then let the attendant be on the alert. As such we may regard a quick and small pulse, coated tongue, altered secretions of the mucous membranes, extreme restlessness and manifestly sinking strength, while at the same time there is subsidence of uterine action.

b) Presentation of the Back and Side.—While questioned or denied by some, it is pretty generally admitted that under certain circumstances the back of the fœtus may present at the entrance of the pelvis. When the child is of diminutive size, this is most likely to occur, especially if favored by the presence of a large quantity of fluid within the sac. If the child, on the contrary, be large and the woman of less than ordinary abdominal dimensions, it is not very easy to see how it could assume this position.

The same remarks apply to the presentation of the side, which does undoubtedly sometimes occur.

Indicative of the first of these abnormal presentations, we will find it, upon examination, difficult to reach the presenting part. If we succeed, however, in touching it, the finger can detect the spinous processes in a line marking the presence and course of the spine. On either side may be felt the insertion of the ribs. In case of the side of the thorax presenting, we have the ribs, which may be traced in their length around the body. If it be the loins that offer to the touch, we may be able still to discover in the vicinity some of the lumbar vertebrae and the crest of the ilium.

Although it is admitted that the above named parts may present at the entrance of the upper strait, it is believed that only very exceptionally they constitute a permanent presentation. If the fœtus, through the abundance of the waters in which it floats, or any special restlessness or activity, take up such a posture, so long as it retains it, it is illy adapted to the cavity of the womb in which it is contained, and, therefore, produces abnormal pressure upon some portion of its walls. This, through reflex action, would excite uterine contraction, through which, according to the law we have cited when speaking of the "Mechanism of Labor," the fœtus would be obliged to adapt its position to the shape of the cavity in which it is contained. It has been abundantly proven by observation, especially of the German obstetricians, as before remarked, that the child often spontaneously changes its position in the latter months of pregnancy. Even should this favorable change not occur until the accession of labor, the contractions of the womb in this process will be likely to bring about a presentation of the vertex or the breech instead of those parts of which we have just spoken.

If we be engaged to attend a patient in labor, and from any peculiarity she may have noticed in her sensations or in the shape of the abdomen, we have reason to suspect any of these abnormal presentations, it will be well to ask permission to make an external examination of her person, and if we have reason to think anything may thereby be added to our knowledge, one also *per vaginam*. When the womb is not too much distended by fluid, or the walls of the abdomen not overloaded with adipose tissue, we may, by skillful palpation, be able to satisfy ourselves of the nature of the case. If we detect a crosswise position of the fœtus, we may administer Puls. which has been advised with considerable confidence in its efficacy, and to which we have before adverted. If a favorable change take place, whether owing to the medicine or not, it is all very well. But if we find, still carefully watching the patient, that at the near approach of labor no favorable alteration has occurred, we should attempt to change the position of the child by external manipulations such as will be elsewhere

spoken of. If we succeed in this the patient should maintain the strictest quietude till after delivery. But if when we are called for the first to attend the case in labor, we find this unfavorable state of things, we should then attempt to change the presentation by bi-manual version—failing in this it remains that we should turn by the feet.

c) **Presentation of the Breech.**—Presentation of the breech is next in frequency to that of the head. It is much more perilous to the child than the latter. There is considerable discrepancy of opinion, however, as to the ratio of infantile mortality when the breech presents. Dr. Churchill represents it as nearly one in three, while Dr. Playfair, one of the latest British authorities, thinks this entirely too high, and gives, as his estimate, about one in eleven. Doubtless the proportion of loss is smaller now than formerly, inasmuch as the management of such cases has greatly improved. To the mother it is generally believed there is no increased risk; but this can hardly be correct, since labor is not unfrequently protracted, and, therefore, the consequences of exhaustion proportionally imminent.

The causes which determine the child to take up this position in the womb, so that, contrary to what usually occurs, the breech, at the time of labor, is found at the upper strait instead of the head, are involved in obscurity. Various theories have been proposed to account for this anomaly in gestation; but to all of them insuperable objections may be offered. In our present state of knowledge, therefore, it is most wise, simply to accept the fact, especially as this will be sufficient for all practical purposes.

It is important that we should, at an early stage of labor, recognize a breech presentation when such exists. Before the rupture of the membranes the diagnosis may be difficult, especially as we should be careful in our explorations, lest we should prematurely discharge the waters, and thus lose the aid of a very powerful agent in dilating the os uteri. Such aid is very important here, as the breech, both from its form and want of solidity, has but little distending power when compared with the head.

When the membranes are relaxed, in the absence of pain, or when they have already ruptured, the exploring finger will sooner or later impinge upon the point of the coccyx, and if carried up in contact with this part, its solid, irregular posterior surface will be felt. This may be regarded as diagnostic of a breech-presentation—as no other part yields the same sensation to the touch. Further exploration will reveal two soft protuberances, the buttocks of the child, which may be distinguished from the cheeks, the only parts for which they could be readily mistaken, by the difference of the underlying bones felt through the muscular structures, by the fissure between them differing from anything found in the face, by the anus in the centre of the fissure, a closed and puckered aperture, resisting the introduction of the finger, at least in the living child, and if the finger be forced within it, the absence of the jaw-bones and gums, which, one would think, would prevent the possibility of confounding it with the mouth. Palpation upon the abdomen of the mother will sometimes enable us to detect the head high up toward the ensiform cartilage, and she will sometimes tell us of her suspicions, from the sensation of a more than usually solid body pressing upon her stomach during the latter period of gestation. The stethoscope may also aid us in our diagnosis, as the sounds of the foetal heart will be heard much higher up than in cases of presentation of the head. The side of the mother upon which we hear the pulsations most distinctly, determines that to which the back of the child is turned, and enables us to decide upon its *position* as well as its presentation. Thus, if the pulsations are most distinctly heard anteriorly upon the left side, we may assume that the back of the foetus is turned in that direction.

The breech, in the same manner as any other part of the child, may present in several different *positions*. Thus the back may be turned to the left side of the mother, and anteriorly, constituting what may be called the left sacro-anterior position, which is by far the most frequent; or it may be turned to the right side anteriorly, the right sacro-anterior position—while each of these has its reverse, and there may exist intervening shades between them.

We have already spoken in a general way of the mechanism of labor by the breech. As such labors, however, are not infrequent, say one in fifty, and require the utmost care and no little skill to conduct them to a safe termination, at least as regards the child, we will go somewhat more into detail upon this subject.

Before labor comes on, the child, as it were, sits in the womb, its head moderately flexed upon the thorax and its limbs upon its anterior plane. Sometimes the limbs are merely flexed at the hip-joints and lie extended their whole length upon the anterior surface of the child, or they are again flexed at the knees and the lower legs folded against the posterior surface of its thighs. In the latter case, before the breech is forced down, the lower legs may somewhat cross each other, as they do in presentations of the head; but, be this as it may, as the breech descends they assume a position in front and parallel with the sides of the child.

The breech enters the superior strait, impelled by the force of the uterine contractions with its long diameter in correspondence with the transverse or oblique diameter of the pelvis. It descends, but its descent is slow compared with that of the head. As it lacks the solidity of that part, and especially if the child be small, it may not rotate so certainly as does the head in its descent. As rotation in this case involves, to some extent, the twisting of the body, and as the soft structures *yield* to compression from opposing parts in the inner surface of the pelvis, rather than evade them, it may come down without shunning such opposition to its descent as the head would do, and thus not effecting complete rotation. Generally, when the child is of good size, one hip or the other, according to the original position, will finally turn under the pubic arch. In this rotation of the hips, however, if it take place, the body and shoulders of the child do not participate.

When the membranes give way, the presenting parts, the hips, are of such irregular conformation, that they do not close the orifice by compression, but permit the waters wholly to escape. The womb then clasps firmly the child, presses its limbs closely to its trunk, as well as flexes its head upon its

breast, and by this compression fits it the better for its transit through the pelvic canal, but, at the same time, prevents the upper parts from rotating in unison with that in advance.

When one hip takes its position under or near the arch of the pubis, the other is thrown into the hollow of the sacrum, the anterior surface of which it traverses, and subsequently the perineum, which it gradually distends. The dilatation of the perineum, however, advances slowly under the distending power of the breech, owing to the softness and compressibility of the latter. In the case of primiparæ this process may occupy hours. The thinned edge of the perineum sometimes falls into the fissure between the buttocks of the child, and thus, for a time, arrests both movement and distension. Ultimately, however, the posterior hip is born, and very shortly, or simultaneously with it, the anterior. If the body have not participated in the rotation of the hips, they then revolve upon the long axis of the fœtus, effecting a kind of restitution. In the natural process the body then partially follows, and the shoulders present at the upper strait, the long or bis-acromial diameter corresponding with the transverse or oblique diameter of the pelvis. As the shoulders descend they rotate with rather more certainty than the hips, because by their greater width they more completely fill the pelvis, and by their greater solidity they are less liable to compression; and, therefore, not accommodating themselves to resistance, they appreciate it, as it were, and move in the direction in which it is least met.

The complete rotation of the breech is practically of less moment than that of the shoulders. For it is manifest that if the shoulders should come down to the lower strait in a transverse position, the head, from its natural relation to them, must offer at the upper strait with its occipito-frontal or probably its occipito-mental diameter in correspondence with the antero-posterior diameter of the strait. There would in that case be such a want of adaptation that the head could not descend. The antero-posterior diameter of the superior strait measures only four inches—the occipito-frontal diameter of the child is also four inches—the occipito-mental five inches. But if the shoulders rotate so as to bring the anterior one under

the arch of the pubis, then the head will present at the upper strait with its occipito-frontal or occipito-mental diameter in relation with the transverse diameter of the pelvis, $5\frac{1}{4}$ inches, so that it can readily pass. The head thus engaging descends, and finally rotates so as to bring its long diameter into accord with the antero-posterior, the longest diameter of the lower strait, and thus speedily follows the shoulders into the world.

The management of labors by the breech is very important, in some cases very simple, in others very difficult. It is a general rule not to interfere so long as the presenting part is making suitable progress, unless the condition of the patient absolutely require it. To exert force upon the breech by means of the fingers or blunt hook fastened in the groin of the child, is apt to draw away the head as it were from the embrace of the womb and cause the chin to recede from the thorax, and carry up the arms from the breast. Better wait with patience upon the process of nature, minding as soon as the cord is within reach to draw it a little downward, and if possible place it to the side of the pelvis, where there appears to be the least danger of pressure. If the patient suffer intensely, chloroform may be administered, which will also conduce to relaxation of the maternal parts. When the breech is born and the body as far as the umbilicus, as the shoulders come down we should try to secure the rotation of the anterior one under the arch of the pubis, a position which it will generally spontaneously assume in obedience to the general law already stated. When these are born we should look after the head. This is the moment of peril. Delay in the descent of the breech, unless through compression of the cord, is usually unattended with danger, but detention of the head beyond a very few moments, is very apt to prove fatal to the child. When the labor is so far advanced that the head offers at the superior strait, it has nearly left the womb, and is therefore almost out of reach of its expulsive power. It is well at this juncture to arouse the energies of the woman by exhorting her to bear down with all her force. We should at the same time introduce two fingers of the one hand, as soon as we can reach the face of the child, and place one on either side of the nose, with which we can by

pressure, flex and draw down the head, while we press upon the occiput with two fingers of the other hand. By such manœuvre the head will usually come down and the birth be safely terminated.

If, however, the breech do not advance and the mother's powers are manifestly failing, here, as always in like circumstances, it will be our duty to attend to her interests, regarding those of the child as secondary. Dr. Barnes advises us in such cases not to apply traction at the groin, but to bring down a foot—the one nearest to the pubis, as in so doing we decompose the wedge which the fœtus represents, the breech forming the apex, and the head, shoulders and flexed limbs the base. Whether we should or should not make traction upon the foot when brought down would depend upon the necessities of the case. If the wedge thus decomposed and diminished in size seem disposed to pass readily, we may leave the further descent to the powers of nature, if they have not already become exhausted—if they have we should deliver.

But after all the most important part is, so far at least as regards the child, the delivery of the head *quickly* after it comes to engage in the pelvis. If the simple manœuvre already described do not succeed, what shall we do, for there is no time for delay? Most writers advise us to resort at once to the forceps—to have the instrument at hand and immediately introduce it, and extract the head. This is probably easier said than done. In the country, at least, we have seldom the assistance at hand that would be required to apply the forceps with ease and expedition. The bystanders would require instruction, and while we should be giving this, the child would perish. From my own very limited experience in the use of the forceps in such cases, I cannot but think it is a bungling, ill adapted appliance. Various other expedients have been proposed by different obstetricians. It will be remembered it is force we want to expel the head, force which the womb is perhaps now no longer able to supply. If it can be rallied or rather assisted by the will of the mother calling into aid the powers of the accessory muscles it will be well; unfortunately, however, as before intimated the head is nearly, if not entirely, beyond its reach. But

another expedient proposed by Prof. Penrose, of which I am disposed to think very favorably, may be used in conjunction with her efforts. The principle is to supply the *vis a tergo* which the womb is supposed to be now no longer competent to furnish. "*Apply your hand or hands,*" says he, "*on the lower part of the abdomen,* or an assistant can make the pressure for you, and press directly *down upon the head*; you can by this proceeding *apply any amount of vis a tergo,* you can *supplement entirely* the lost force of the uterus and the lost force of the mother's efforts * * * * the rapid delivery of the head can always be *easily* and quickly secured *by the bearing down efforts of the mother,* aided or even *replaced by the bearing down efforts of the attendant.*"—*Obstet. Journ., Great Britain and Ireland, Amer. Supplement.*

We have not had occasion to test this method, but would not hesitate to do so with great confidence in its prospect of success if well executed. It would probably be advantageous to place the patient upon her back, with her hips near the edge of the bed. An assistant, or even an intelligent nurse might be instructed beforehand, to lay her hands, one upon each side of the womb, gently following it down as the body of the child recedes until the moment when the head alone is felt, ready to engage in the upper strait. Then at that instant a grasping, downward, pressing, pushing movement should be made upon the head through the fundus of the womb, and in the direction that common sense would dictate as most effectual to extrude the head. By assigning this duty to an assistant the accoucheur would be left at liberty to manage the body of the child, and might aid by moderate traction, for if the head be pressed downward by an external force, there would be little danger of extension taking place so as to interfere with its speedy delivery.

We have thus dwelt upon the management of the after-coming head, because it is important not only in cases of spontaneous breech presentation, but also in cases of artificial version by the feet. In all these it is scarcely necessary to repeat what may be readily inferred from what we have already said, that prompt delivery of the head is essential to the safety of the child.

We have already spoken of direct traction as a means of delivering the after-coming head. We are usually restricted in our application of this means, by a dread of breaking the child's neck. It is doubtless a good rule to use no more tractile force than is necessary for the accomplishment of our purpose. But from the experiments of Matthews Duncan (*British Medical Journal*, Dec. 19, 1874, p. 763), it appears that the neck of a dead child, at term, can sustain a weight of one hundred and five pounds before the spinal column gives way. In the case of the living infant, it is probable that muscular resistance would enable it to sustain a still greater force. But how great a force may be applied without doing serious injury, is still another question. In desperate cases, however, where ordinary force does not suffice, and where a few moments' delay will undoubtedly sacrifice the life of the child, we will be justified in increasing very considerably the amount beyond what we commonly use.

Heads as well as pelves may differ so much in shape, that it is impossible, by any previous calculation, to determine exactly where they will nip, and it is very difficult in the hurry and excitement of the moment to discover what point is arrested, and exactly where arrest has taken place. If we will bear in mind, however, the general law laid down, and when the pressure of the assistant from above is for a moment relaxed, if we will, by a wriggling movement, detach the head from its lock, then applying force in a somewhat similar manner, according to the illustration elsewhere given, viz., the drawing of a buckle through a compressed terret, it will move in the direction of least resistance, and if the space be not entirely disproportionate to its size, it will speedily be born.

It sometimes happens in presentations of the pelvic extremity of the child, that the thighs depart from their close approximation to the abdomen, and the lower legs recede from the thighs, giving rise to what is termed a presentation of the feet.

Again, the thighs may be extended, while the lower legs are still more or less closely applied to their posterior surface. This constitutes a presentation of the knees. These presentations assume different positions as true presentations of the

breech. It is unnecessary here to speak further of them, as they are only varieties of that of the breech, and the same principles we have already laid down equally apply to their management.

DEVIATED PRESENTATIONS OF THE HEAD.

It occasionally happens, through obliquity of the uterus or other causes, that the head, instead of presenting fairly at the superior strait, rests upon the brim of the pelvis, and when acted upon by energetic contractions of the womb, is, according to the direction of the force, either restored to a normal presentation or is made to deviate still further therefrom. When the former takes place the labor usually proceeds in the natural manner; when the latter, a presentation of the shoulder is apt to be the result. Such presentations, although generally believed to arise from deviations of the head, may, it is thought, sometimes be original, and these are believed to be necessarily associated with obliquity of the uterus. In a large proportion of cases of shoulder presentation the arm prolapses, sometimes also simultaneously, the umbilical cord. The descent of the latter is generally, if not always fatal to the child, unless speedily remedied by appropriate measures. When the arm has come down, the hope of the presentation being corrected by the natural powers alone, through what is termed "spontaneous version," that is, a replacing of the head or even substituting the breech over the entrance into the cavity of the pelvis, is very small. The *os humeris* of the fetus, although lacking the solidity of that of the adult, is sufficiently solid to act as a pin, in fastening down the shoulder in its assumed position. This may be illustrated by supposing a small piece of board having a wooden pin inserted into it, laid upon another, perforated so as to let the pin pass through it. In such circumstances no ordinary force can move the small board sidewise, for the pin passing through the other board prevents its motion. But if we suppose the pin replaced by something more flexible, as a piece of gum elastic of the same diameter, now although the small board may be made to move sidewise, by forcing it

to drag the gum elastic through the hole, it will require much more force to produce the result than if the gum elastic pin were not in the way of its movement.

“In Nature we observe,” says Dr. Barnes, “two chief shoulder positions, and each of these has two varieties. In the *first position*, the head lies in the left sacro-iliac hollow. In the *second position*, the head lies in the right sacro-iliac hollow. Now, in either position, either the right or the left shoulder may present. Thus if the head is in the left ilium, the right shoulder will descend when the child’s back is directed forward; and the left shoulder will descend when the child’s belly is directed forward. In the case of the *second* or right cephalo-iliac position, the right shoulder will descend, when the child’s belly is turned forward, and the left shoulder when the child’s back is turned forward.”

Although it cannot be denied that shoulder presentations under favorable circumstances may be converted into presentations of the vertex, or even of the breech, such a fortunate change is too improbable to be worthy of much reliance in practice. It may do well enough for the *doctor* to sit expectant by, to see what dame Nature unassisted may be able to accomplish, and if she succeed, to have it in his power to report a wonderful case, and encourage some one else to pursue the same course. But to do so is generally to do it at the risk of the patient’s life. The shoulder will for the most part sink deeper and deeper into the cavity of the pelvis, and become more and more immovably fixed. The waters will gradually drain off and the womb tightly embrace the fœtus on all sides—insinuate itself completely into its whole outline, and retain its hold even in the absence of pain. Unable to overcome the opposing resistance, the efforts of the uterus increase into fury, and if not soon successfully aided, end only in rupture of the organ itself, or in complete and often fatal exhaustion of the patient. We remember two cases treated in this manner in which we were finally called in consultation. In the first the membranes ruptured about one o’clock in the morning, and a presentation of the shoulder with prolapse of the arm and cord immediately manifested itself, attended also by very considerable flooding.

I was called about nine or ten o'clock the same morning. The pains had entirely ceased, and the patient lay in an extremely prostrated condition. From the size of the prolapsed arm, there was reason to infer that that of the entire fœtus was proportionate, an inference afterwards fully confirmed. The death of the child was, of course, considered as certain from the condition of the cord, already for a long time pulseless and collapsed; the only object in view, therefore, was to save the mother. As the waters were almost wholly drained off, the child closely embraced by the womb, and the shoulder forced deep into the cavity of the pelvis, while a stout arm occupied the vagina, *cephalic* version was out of the question, and *podalic* version was likely to be very difficult. Under these circumstances I proposed to the attendant physician to deeply anesthetize the patient with chloroform, and then endeavor to effect turning by the feet, but that without this preliminary I did not wish to attempt it. Objections were at first made to the use of chloroform, as likely to increase the hæmorrhage, as it is *said* to do, but these were finally waived upon assurances that it would not *necessarily* do so. The patient was then very thoroughly brought under the influence of the anæsthetic, and turning and delivery effected with comparative ease; she did not, so far as I could perceive, move a muscle during the whole operation. The hæmorrhage gradually yielded under the use of Apoc. can. and Trillium pen., given in succession, and by the afternoon it had entirely subsided. A good, but necessarily, from the amount of hæmorrhage, a somewhat slow recovery followed.

The second case alluded to above was not so fortunate. A little before or shortly after the arrival of the attendant (1 o'clock, P.M.), the waters were discharged and the arm immediately prolapsed. A messenger was at once despatched for me to see the case in consultation, but unfortunately I had just gone several miles from home, in an opposite direction, and the messenger did not follow me. The pains immediately became strong, increasing still in force, till, as I was informed, from 5 P.M. onward till I arrived, they had reached a degree of agony such as the attendant thought he had never before witnessed.

Owing to my late reception of the message, it was not till 9 o'clock, P.M. I arrived at the bedside. The patient was of remarkably short build, and upon examination I found the shoulder so crowded down, that the hand could not be carried up so as to reach the feet. I first placed her in the knee-and-elbow posture, sustained by assistants, hoping that through the influence of gravitation the shoulder would somewhat recede, and make room for the hand to pass, but in this I was wholly disappointed. The patient was then again laid down, and chloroform administered to full anæsthesia. The relaxing effect of this agent was such that upon a second attempt the hand was readily introduced, a foot seized, and delivery effected without any special difficulty. The child was of very large size, but of course still-born. No appreciable hæmorrhage followed. The patient waked up as usual from the effects of the anæsthetic, and we entertained the hope that with the proper care she would do well. I remained about an hour after delivery, and having conferred with the attendant in another room, as to the best mode of after-treatment, I was about putting on my coat to retire, when suddenly summoned to the bedside, I found the patient dying. This seems to have been a case of death from shock through extreme and protracted suffering. She had, as I learned, taken a large amount of morphia, by way of palliation, before my arrival.

In order to secure the best results in the management of shoulder presentations, it is important we should recognize them as early as possible. If this can be done before the membranes have ruptured, we should endeavor to effect cephalic version, as directed in the chapter on "Turning." The necessity for version by the feet should, as far as possible, be avoided; in fact should be had recourse to only as a last resort. If the child be of large size, and especially if the waters be discharged, it may, perhaps, be said to be generally fatal to its life. Under the same circumstances, too, it is very hazardous to the mother. But however important it may be to recognize early a shoulder presentation, if such exist, it is not always easy before the rupture of the membranes.

When upon a first examination the presentation cannot be

felt, while yet we are satisfied that the woman is really in labor, we have reason to suspect there is something wrong, and should be upon our guard and keep a vigilant lookout. I have, however, met with cases in which, at first, I could not touch the presentation, but after an hour or so it came within reach, and was as I desired. It is possible that in such cases the presentation had been changed by the powers of the womb from a faulty to a good one.

If the membranes, however be lax, or there be present but a small amount of the amniotic fluid, we may, by a careful examination, carrying up the finger as high as possible, even allowing the hand partially to follow it into the vagina, when this is practicable, be able to detect the shoulder presenting at the superior strait. The signs, by which it may be recognized, are the presence of the acromion process, the scapula, the spine of the scapula, the axilla, and when they are accessible, the spinous processes of the vertebral column. We should notice, too, the relative position of these parts by which we may determine whether the fœtus lies with its anterior aspect toward the front of the mother, or the reverse. If we have not been able to satisfy ourselves of the presentation prior to the rupture of the membranes, we should immediately examine when this takes place. And now, as often happens in shoulder-presentations, if the arm prolapse, we must not jump to the conclusion that the shoulder is present at the upper strait, for the arm is sometimes extruded beside the head. The best advice we can give the student or young practitioner, to enable him to recognize the shoulder or any other part presenting, is to familiarize his sense of touch with these parts in the born, but quite newly born infant. Feel the shoulder in connection with the neighboring regions,—also the knee, the elbow, the hands, the feet. Repeat this until you know and remember exactly what sensation these different parts communicate to your sense of touch—until when you explore the shoulder you will *know* it is not the elbow or the knee; when you lay hold of the foot you will *know* it is not the hand. If once this experience is acquired, it will be useless to tell the student that he may distinguish the foot from the hand because the former has a great toe, the latter has not.

Although, as we have intimated, slightly deviated presentations of the head may be, and perhaps generally are, corrected by the natural powers alone, and even the shoulder, through the same powers, may depart from the upper strait and the vertex or breech take its place, we cannot always depend upon this result, and if it should fail to take place, the longer we delay, the more difficult will it be to avail ourselves of the resources of art. These rectifications, by nature alone, probably take place, for the most part, where the child is somewhat below the normal size.

If then upon the rupture of the membranes, or better still, before this occurrence, we detect the shoulder at the superior strait, whether the arm be prolapsed or not, we should at once endeavor to correct the presentation. The fingers of one hand are introduced into the vagina, and an attempt made to push up the shoulder, and, if successful in this, we should endeavor, by the requisite manipulations, to coax the head to take its place. These attempts may generally be greatly aided by the other hand applied to the abdomen of the mother, and gentle force exerted through its walls upon the other extremity of the fœtus in such a manner as common sense would suggest as most likely to lead to the accomplishment of our purpose. To give minute directions here, would be only to perplex, for if the practitioner has not sufficient common sense to perceive what forces he needs and in what direction to apply them, he would be unable to follow advice given in detail. If we can bring the head over the entrance into the pelvis and secure it there until it engages in the superior strait, we may safely entrust the labor to the natural powers.

If we be unable to succeed by this simple method in correcting the faulty presentation, unless we are satisfied the child is very small, and the powers of the woman very vigorous, we should proceed at once, before the waters are wholly drained off and the womb contracted firmly upon the child, to turn by the feet. For minute instructions in the method of doing this successfully, the student is referred to the chapter upon that subject. (See Version or Turning).

I would only further remark that, as may be learnt from

the two cases given above, the previous administration of chloroform affords immense advantages in the operation of turning either by the head or by the feet. It should, when used as a preliminary measure to this operation, unless there be manifest counter-indications, be given until deep anæsthesia is produced. Let it be administered cautiously and slowly, so as to induce complete insensibility and that gradual and beautiful relaxation of the tissues which, when judiciously given, it can accomplish. If the chloroform even completely arrest the action of the womb, which it does not often do, it will so much the more contribute to our purpose. These assertions are not only fully accordant with my own experience, but sustained by the vastly greater experience of others—men of unquestioned eminence—whose testimony ought to be received, one would think, without cavil.

I have noticed in several cases where I have been called in consultation, to one of which I have just adverted, where morphia had been freely given by the previous attendant for the relief of pain, that the effects of chloroform were not only more speedily induced, but the insensibility was more profound, and the relaxation of tissues more complete than where no such antecedent measures had been adopted. Since I noticed this phenomenon, I have learnt that M. Bernard has used morphia previous to the administration of chloroform in his vivisections, and the result was that his subjects became perfectly passive and relaxed, opposing no resistance to his operations.

In cases where the waters have been long drained off and the womb closely embraces the child, and where turning seems still to be the procedure most promising of good results, we might take advantage of the fact above stated, and, half an hour before we operate, administer a dose of morphia, either by the mouth or by subcutaneous injection. This we would follow by the administration of chloroform, to complete anæsthesia before we attempt to turn. I would, however, subjoin the caution, that where great prostration exists, morphia *should not be given*, as it probably greatly adds to the shock, and proportionately increases the danger from that quarter. Under these circumstances chloroform should be given with great care, and its effects very carefully observed.

CHAPTER X.

ACCIDENTS AND DISEASES INCIDENT TO
LABOR AND THE PUERPERAL STATE.

PROLAPSE OF THE CORD.

This is one of the most fatal accidents, so far as the safety of the child is concerned, that occurs during labor. I need hardly say that this fatality is owing to the compression of the cord, arresting the circulation through its vessels, and thus causing asphyxia. The length of time necessary to produce this effect has been variously reckoned from two to ten minutes. The former is probably a shorter time than is generally required to cause the death of the infant, while the latter is, no doubt, considerably longer.

I need not spend time in pointing out the diagnostic signs by which prolapse is detected. When the cord is felt prolapsed it is, or ought to be easily recognized—it is not easy to imagine how it can be mistaken for anything else that may occur, or anything else mistaken for it.

There are, however, a few cases upon record in which a coil of intestine has been mistaken for the umbilical cord, and which mistake led to the most disastrous consequences. Dr. Tyler Smith, in his Annual Address to the Obstetrical Society of London, reports the following: “A midwife attended the patient, a very poor woman, during her labor, and she admitted having given Ergot before the birth of the child. Mr. Robinson was called at midnight to remove the placenta, going as a matter of charity. On examining he found what seemed to be a loop of funis in the vagina; passing his hand along it and through what he supposed to be the os uteri he felt a mass of about the size of the placenta which he drew down. Finding some difficulty, he divided the supposed funis in two

places, and then found to his horror that he had been dealing with intestine. At the post-mortem and inquest it was shown that a laceration existed at the upper part of the vagina, through which the bowel had passed, and the placenta was still in utero with the funis broken short off. The real facts were, no doubt, that the laceration occurred during labor, probably from the Ergot, that the midwife tried to remove the placenta (there probably being spasmodic contraction of the os uteri in consequence of the Ergot), and in doing this tore the umbilical cord from its attachment. This was not mentioned to Mr. Robinson. The loop of intestine descended, as it often does in such cases, through the rent. Mr. Robinson, called at this peculiar juncture, fell into the trap." The unfortunate man was tried in a British court for homicide and convicted.

We hence see the importance, especially when aroused from our midnight slumbers, of taking sufficient time to learn the facts of the case and knowing precisely what we are going to do, before we act. This especially applies when called to cases which have been attended by ignorant midwives or ill-instructed, inexperienced physicians, especially such as deal haphazard in enormous doses of Ergot. We should in such cases most cautiously feel our way, distinguishing everything we meet with, from everything else to which it bears resemblance, and never operate until we are fully satisfied as to what we are about to operate upon. We can hardly conceive, however, of such a mistake being made and leading to such mal-practice *prior* to the birth of the child. So long as the funis pulsates it may be distinguished from intestine by its pulsations alone, which are rapid and not synchronous with those of the mother. When it has ceased to pulsate, as it usually has when long pro-lapsed, we cannot avail ourselves of this characteristic. But the peculiar sensation imparted by the cord, when slightly compressed between the finger and thumb, would, I think, sufficiently distinguish it from anything else. The young practitioner should familiarize himself with this sensation till he cannot possibly be mistaken.

It is unnecessary to state the causes which have been assigned

as giving rise to this accident, inasmuch as they are generally irremediable in the case before us. Our business will be to exhort to that vigilance and alertness which will enable us to detect it immediately upon its occurrence, and adopt the best means for its relief.

If we be convinced that the umbilical cord is presenting, before the rupture of the membranes, we should watch the case most assiduously, and make an examination *immediately* after the waters break. We shall then probably find the cord more or less prolapsed, and if so this will be the moment for decided action.

Various expedients have been advised for remedying this accident. Some direct us to carry up the cord with the fingers and hook it upon the chin of the child when the head presents, —others instruct us to hang the loop upon one of the limbs of the fœtus. Some again would simply place the prolapsed portion within the womb and retain it there for a few subsequent pains. Others advise us to turn or apply the forceps according to the presentation, or the distance to which the presenting part has sunk into the pelvis. The two latter expedients, one or the other, may be successful or even necessary in some cases, as, for instance, turning when the shoulder and arm present. The other methods are apt to fail from the fact, that the cord generally prolapses again and again, unless the pains be sufficiently vigorous and the pelvis sufficiently wide to bring the head rapidly down, so as to occupy the space to the exclusion of the funis, and terminate the labor very speedily.

Dr. Thomas, of New York, in the year 1858 proposed a method of treatment which he termed the postural method, and which, in the large proportion of cases of this accident, is likely to take the precedence of all other modes of treatment. His plan consists in placing the woman upon her knees and elbows, her face resting upon a pillow. The prolapsed cord is then carried up into the womb with the fingers, and gravitation then acting in an opposite direction, it does not again descend. After retaining this posture for ten or fifteen minutes, that is till after the occurrence of a few pains, the patient is suffered to resume the usual obstetric position upon the left side. This

method is said to be very successful in saving the life of the child, and avoids all risks to the mother such as she necessarily incurs in the operation of turning, and even too hasty delivery with the forceps. This practice has been introduced into England with decided approbation. Dr. John Brunton, Surgeon-Accoucheur to the Royal Maternity Charity, details a number of cases, in a late number of the *Obstetrical Journal of Great Britain and Ireland*, in which the plan succeeded admirably in his own practice, to which he adds several cases equally successful from that of Dr. Wilson, Professor of Obstetrics in Anderson's University, Glasgow.

If the presentation of the cord be recognized before the rupture of the membranes, it would be well to try this method. Should the membranes be slow to rupture spontaneously, the waters might be discharged by artificial means, as soon as the os uteri would be found sufficiently dilated. Thus the head might engage in the upper strait and prevent prolapse.

ADHERENT PLACENTA.

This may, perhaps, strictly speaking, not be properly termed an accident of labor, as it undoubtedly is a pre-existing condition. But it is during labor it first becomes known to the obstetrician, and then first demands his attention. It seems proper, therefore, to treat of it in this place. We have already spoken of the delivery of the after-birth in normal labor, even when undetached at the birth of the child and for some time afterwards. But we have here reference to those cases, and those cases only, wherein the placenta is not only retained beyond the usual time, but abnormally or morbidly attached to the surface of the womb, resisting the ordinary attempts at separation.

We will not here stop to inquire into the causes of this unfortunate condition. No doubt they are varied. Some morbid state of the surface of the womb, or of the placenta, or of both, precedes and gives rise to this unnatural adhesion. This is, perhaps, most generally inflammatory action from injuries or other causes.

It would seem that some women are peculiarly liable to this accident. I knew a young lady several years ago who, in her first labor, I was told, retained the placenta for several days, as it had resisted the usual attempts at removal. It was, however, finally extruded "en masse," and she recovered without any specially untoward symptoms. At her next confinement she experienced the same trouble. I was called to see her nearly twenty-four hours after delivery. A young physician, previous to this, had made unsuccessful efforts to extract the placenta, and had abandoned the case as beyond his skill. With great difficulty I succeeded in introducing the hand into the womb, but the latter was so forcibly contracted, that I was unable to use my hand satisfactorily, even by way of exploration. I could only ascertain that the placenta seemed to be firmly adherent in its whole extent, except a small portion of its lower margin, which may have been detached in the previous attempts at removal. Having no reliable assistant to keep the patient anæsthetized, and believing the operation impracticable without chloroform, I postponed further proceedings until I could secure these advantages. It was late, and I was under the necessity of returning home, over several miles of road in the worst possible condition. My plan was to fully anæsthetize the patient, dilate the os uteri with the colpeurynter—we had not yet heard of Barnes' dilators—introduce the hand and tenderly remove as much as possible of the placenta. Unfortunately in my absence violent hæmorrhage took place, and another physician, who was much nearer, was called in. I was also summoned, but when I arrived the patient was pulseless and speechless, and as pale as a corpse. Hæmorrhage was still going on. The case being a desperate one—life nearly extinct—the patient incapable of giving a single symptom or answering the simplest question, I resorted at once to injection of a weak solution of perchloride of iron. Hæmorrhage almost instantly ceased. I remained with the patient during the night. Pulse gradually returned, and by the next day she had considerably rallied, but still, I thought, too feeble to carry out the plan above indicated. In my absence she began to show signs of septicæmia, which did not yield to any remedies em-

ployed, and of which she died in the course of two or three days. Pieces of the placenta picked off by the physician who first visited her during the hæmorrhage, were examined by me and found to lack the usual structure of placenta, more resembling in texture the fibrous muscular portions of beef, an abnormality which I had surmised from my imperfect exploration.

There had been, as I understood in this case, but little hæmorrhage up to the time I first saw it, and this coincides with the very extensive adhesion which I supposed to exist, for it is manifest that the mouths of more vessels will be left patulous if there be a pretty extensive separation of the placental mass, than under the opposite circumstances. The uterus maintained its contraction when I last saw the patient before the hæmorrhage occurred; that accident, therefore, especially in so violent a form, was to me unexpected. Probably further separation of the placenta and relaxation of the womb had simultaneously taken place. When I saw her after the occurrence of the hæmorrhage, the degree of contraction of the os uteri was such and her exhaustion so extreme that I could not then ascertain the then present condition of the placenta.

The intimate adhesion of the placenta, which we here contemplate, cannot be fully ascertained until we introduce the hand and attempt to remove it. In order to effect this we proceed, at first, as we would in the simpler forms of adhesion, where, from inertia, we are sometimes obliged to assist nature, namely, endeavor to find a detached portion somewhere around the edge of the mass. If found, insert the points of the fingers of the left hand under this, with the dorsal surface turned toward the inner surface of the womb. Give the fingers a swinging motion from side to side, thus gently separating the placenta from the womb. I need hardly say the finger-nails should be pared short and smoothed at the ends. In this manner, as far as possible, detach all that can be easily detached, until the more firmly adherent portion is, as it were, isolated. Then spreading fingers so as to embrace the whole mass, compress it toward, and so as to embrace, the still adher-

ent portion. Then, with a wrenching movement and slight pressure, turn the mass so as to cause it to separate. This manœuvre will probably bring away as much as can be separated without risk of wounding the surface of the womb. The hand, however, may be again introduced and the surface examined, and if portions loose, or partially detached, be found there, they can be removed. In this operation, and all similar ones, the womb should be sustained and properly manipulated by the outside hand.

In all such cases we should, for several days, be on the lookout for post partum secondary hæmorrhage, of which we will fully speak further on.

It is still an undecided question how far we should proceed in our efforts at the removal of morbidly adherent placenta. On the one hand, if any considerable portion be left behind, we run the risk of hæmorrhage and septicæmia—on the other, we may so wound the uterine structures as to give rise to fatal inflammation of that organ. We should carefully consider the specialities of the case, and accordingly take our risks. Whichever of these we select, we should do all we possibly can to prevent the anticipated evil by way of prophylaxis.

HÆMORRHAGE.

This is one of the most common, and not unfrequently one of the most alarming accidents of labor which it is the lot of the obstetrician to encounter. Its occurrence is often sudden, and it may be unexpected, and its violence sometimes so great as to threaten the speedy extinction of life, or at least extreme prostration, followed by a very tedious and unsatisfactory convalescence.

This introductory statement will at once show how important it is that the young practitioner should be fully prepared to meet such emergency with calmness and self possession, which can be done only by his having at his command the resources of our art, to be brought promptly into requisition, according to the varying character of the cases with which he may meet.

a) **Ante-partum Accidental Hæmorrhage.**—We have already spoken of the hæmorrhage sometimes *accidentally* occurring during the course of pregnancy, as well as that antecedent and subsequent to abortion. We now propose to consider the forms of the same accident which take place in connection with labor, *premature* or at full term. By the former, as before defined, we mean that which happens after the viability of the fœtus, but before the usual term; by the latter, that occurring at the close of normal gestation. In order to avoid as far as possible repeating what the student has elsewhere learnt, we assume that through works on anatomy he has become fully acquainted with the structure of the parts concerned in reproduction, and from those upon physiology, the functions of the various organs thus concerned. It will be necessary, therefore, in this place only to remind him of the vascular connection between the placenta and the womb. Through the vessels of the latter, blood is carried into the former, from the organism of the mother, to perform the function, however that may be done, necessary to the nourishment and growth of the fœtus during its intra-uterine life. These vessels are large in proportion to the amount required for this purpose, and the afflux to the parts is influenced by the constant demands of the growing child. The quantity of blood therefore at all times circulating through these vessels is very considerable. It will be thus apparent that when they are severed, from any cause whatever, and remain patulous, hæmorrhage must ensue. This sometimes happens in the course of labor otherwise normal, from a premature detachment of a portion of the placenta. The ordinary means provided by nature for the prevention of hæmorrhage from the open utero-placental vessels, is their closure by the contraction of the womb; but this cannot fully take place while the fœtus as well as its appendages, is still retained within its cavity. When, however, the placenta is attached at a distance from the os uteri, as it usually is, this form of hæmorrhage is seldom such as to be attended with serious consequences, or even to cause alarm. If sufficiently copious to require attention we may administer Apoc. cann., four grains of the first dec. trituration of the bark of the root, in four tablespoonfuls of water,

giving a teaspoonful every few minutes. Trillium pen., a few drops of the mother tincture, in a like quantity of water, to be given as above. Per-sulphate of iron diluted with water will probably answer a good purpose. Also Ergot may be thought of, especially if the character of the pains correspond with the pathogenesis of that drug. If these or other remedies, apparently indicated, fail to arrest the flow, if the os uteri be pretty fully dilated or dilatable, we may rupture the membranes and discharge the liquor amnii. The womb, then, especially if in vigorous action, will contract upon its contents, and thus at least close the mouths of the bleeding vessels, and arrest or modify the hæmorrhage.

Another source of hæmorrhage *during* labor, is the occasional presence of a uterine polypus. This is a rare occurrence, but should not on that account be passed without notice. Some authors advise, when it can be brought within reach, to ligate and remove it. The method of doing this will be found described in works professedly upon uterine surgery. This operation, when performed during the puerperal condition, is not without danger, and when the tumor does not interfere with delivery, it is perhaps best to treat the hæmorrhage as above, and for the present let it alone.

Hæmorrhage during labor may occasionally arise from ulceration of the os uteri. The distension to which this part of the womb is subjected during the process of parturition, if ulceration has previously existed, almost necessarily ruptures the small vessels traversing its surface, which of course pour out their contents. Hæmorrhage from this source is not likely to be alarming—much less fatal. If detected, and thought worthy of attention, perhaps the best method of holding it in check would be to carry up a pledget of lint, moistened with a solution of Per-chloride or Per-sulphate of iron, into contact with the os, and let it remain there till displaced by the force of the womb. The strength of the solution may be properly regulated by adding gradually to water the solution of the salt as generally sold, until it produces a very decidedly styptic taste when applied to the tongue.

Laceration of the os uteri and vagina are also named as

sources of hæmorrhage. Although the accident, when it occurs, takes place during labor, the consequent hæmorrhage is not likely to manifest itself till that process has been completed. When it happens, it will probably be most effectually controlled by the application of a styptic, as above directed.

b.) Placenta Prævia—Unavoidable Hæmorrhage.—But by far the most important source of hæmorrhage during labor is the implantation of the placenta wholly or partially over the os internum or cervix uteri. This is called “placenta prævia,” and, in the opinion of some, *always* gives rise to hæmorrhage of a more or less alarming character, and from this supposed certainty of its occurrence, it has usually been termed “*unavoidable hæmorrhage*.”

“Although a hæmorrhage,” says Cazeaux, “is usually conceded to be inevitable under such circumstances, yet it may not appear even during the labor; and the dilatation of the os uteri may be effected without the loss of a drop of blood. This absence of discharge is doubtless a rare circumstance; but its authenticity at the present day, is well established by numerous cases; authors only differing as to the explanation given of it.” So rare indeed, however, is such exemption, that it should not in the least influence our precautions in practice.

In cases of placenta prævia, the hæmorrhage usually manifests itself a few weeks before the close of gestation. On its first appearance it is not always violent; perhaps not generally so. If the patient keep quiet it usually subsides spontaneously, but is apt to recur again and again, up to the time of delivery. When we are called to a case of flooding, toward the close of gestation, and are not able to trace the accident to any violence, such as a fall, lifting heavy weights, or any kind of over-exertion, we have reason to suspect the existence of placenta prævia. Our suspicions will be confirmed, if a second occurrence take place in like manner, without any assignable cause. If an examination be now made, and the os uteri be sufficiently patulous to admit the point of the finger, a spongy mass will be felt overlying it.

The theory formerly entertained to explain these precursory hæmorrhages was the following. It was thought that the os

internum began to dilate some time before labor, preparatory to that process, and as the placenta, firmly attached to the lower segment of the womb, could not stretch, so as to accommodate itself to the altered condition of the seat of its attachment, its connection with the womb was gradually severed, and consequently the utero-placental vessels ruptured, and hence they poured out their contents. This theory is now by the more advanced authors regarded as untenable, inasmuch as it is believed that dilatation begins at the os externum and advances upwards, and not the reverse of this, which the theory contemplates.

In his work on Obstetric Operations, Dr. Barnes gives us a diagram representing the womb as divided into three zones, as he terms them. The upper he calls the fundal zone—the middle, the meridional zone—and the lower the cervical zone. When the placenta is seated upon the latter, hæmorrhage must ensue *prior* to labor, because, as he affirms, this region does not dilate in proportion to the growing demands of that organ, and *during* labor, because this portion of the womb *must* dilate, recede from the os, its centre, and fall back in all directions, to afford an opening for the child to pass, and hence, as it recedes, must detach itself from the placenta in situ upon it, and, of course, open the uterine vessels, over which the latter had been superimposed. In this process, however, the cervical zone, as it recedes towards the middle, or meridional zone, and is, as it were, lost in it, closes its own vessels, and thereby *arrests hæmorrhage from their mouths*.

The theory of Dr. Barnes to account for the *first* accessions of hæmorrhage, it seems to me, is liable to objections. Perhaps all we are justified in saying confidently of these early attacks is, that they are owing to partial separations of the placenta from its attachment to the internal surface of the womb, causing an opening to a greater or less extent of the utero-placental vessels, which consequently pour out their contents. What causes this severance is not so plain. Possibly, as the placenta is here implanted upon a less congenial soil than it would have found in the higher regions of the womb, its attachment may be less firm, and therefore more liable to be disturbed by slight

causes. Thus unfavorably situated it may possibly undergo changes itself, in the latter months of pregnancy, increasing the instability of its hold upon the uterine surface. Under these circumstances, slight forces may effect separation more or less extensive. It is now well ascertained, as we have stated in the chapter upon the Signs of Pregnancy, that the womb, during gestation, is constantly subject to contractions at short intervals. Even these, under favoring circumstances, may cause utero-placental separation, and give rise to hæmorrhage. But whatever doubts we may have of the correctness of Dr. Barnes' theory of the *precursory* hæmorrhages in cases of placenta prævia, his explanation of the cause of that during labor is entirely satisfactory, and seems unquestionable.

Fortunately placenta prævia rarely occurs, but when met with constitutes a very dangerous complication of labor. Its infrequency of occurrence itself, furnishes a reason why the practitioner should thoroughly acquaint himself with everything necessary to its successful management.

Various methods have been from time to time proposed for the treatment of this accident, most of which it must be confessed have been very unsuccessful. A large proportion of the infants have been lost, and not a few of the mothers.

We were told by the older authors, that when called to a case of placenta prævia, we should moderate the attendant hæmorrhage by cold applications, or if necessary hold it in check for a time, by the use of the tampon, until the os uteri is sufficiently dilated, or in urgent cases even hasten its dilatation by moderate force, pass up the hand peeling off the placenta on one side, rupture the membranes as far up as possible, seize a foot, turn and deliver. This method, now perhaps pretty generally abandoned, at least as to its indiscriminate application, is open to many objections, and its want of success proved it practically to be a very bad one. The os uteri, notwithstanding the hæmorrhage, is not unfrequently slow to dilate, being, as it were, sealed up by the superimposed placenta. Hence, while waiting for the completion of this process, the patient may perish from the loss of blood. Again, turning by the old method subjects the child to considerable risk, and the

shock from suddenly emptying the womb may very likely prove fatal to the mother, already reduced to the lowest grade of prostration, through great and repeated losses of blood. Under such circumstances the *womb should never be suddenly emptied.*

Another method, first proposed I believe by Dr. Radford, was to insert a finger into the os uteri and peel off the placenta *entirely* from its attachment to the womb. It was said that the hæmorrhage then ceased, and the labor might be allowed its own time for completion. This was a step in the right direction; for, although all was not done that was intended, that, at least, was often done which was required. That is, although it was intended to remove the entire placenta, this was really not effected; for, as Dr. Barnes has shown, the finger could not reach the entire insertion of the placenta. It was, however, detached from the lower segment or zone of the womb, and this, as we shall see, was all that was necessary to arrest the hæmorrhage.

It should be remembered that no single method of treatment is applicable to all cases with which we may meet. Having familiarized ourselves with the great principles upon which all rational and safe practice must be founded, we should modify our treatment according to the dictates of science and common sense, so as to suit each individual case.

When consulted for hæmorrhage, *prior* to the actual commencement of labor, we may use such measures as are elsewhere laid down to arrest it temporarily. Perfect rest in a cool room, Apoc. can., Trillium pend., Viburnum, Erigeron can., Thlaspi bursa-pastoris, selected according to symptoms, are likely to answer our purpose. We should watch the case closely, and if the patient seem seriously endangered from repeated losses of blood, we should conscientiously consider the propriety of inducing premature labor. If this be decided upon, we may find that introducing and inflating, or filling with water, the colpeurynter, carried up to the os uteri, may be the means not only of temporarily arresting hæmorrhage, if such be present, but of bringing on efficient labor pains. Should this simple measure not succeed in accomplishing our

purpose, we should adopt such means as are pointed out in our chapter upon the induction of premature labor, that may be found suited to the case.

In attending a case, whether of induced or spontaneous labor, if the os uteri do not dilate we may use Barnes' dilators one after the other in succession. When the os uteri is sufficiently dilated to admit of the operation, if hæmorrhage is still going on, we should puncture the membrane through the placenta with a male catheter, and *slowly* draw off the liquor amnii. This will especially be proper if we have fully satisfied ourselves that the head presents—if otherwise, and podalic version of the child seem likely to be demanded, the measure may be more questionable. When the waters are discharged the womb will probably contract more vigorously, and forcing down the head upon the placenta, will apply it as a compress upon the bleeding vessels. If the pains be not sufficiently vigorous, give Ergot in small doses, repeated at very short intervals, so as to be able to control its effects. If hæmorrhage, however, still continue, introduce the finger and detach the placenta all around, as far as it can be reached. This will remove an obstacle to the full dilatation of the os uteri, and favor the retrocession of the lower segment of the womb, and enable it to fall back upon the meridional region. We have seen that in so doing its patulous vessels are closed, and hæmorrhage consequently ceases. If the action of the womb be now energetic, either spontaneously or in response to Ergot, and the presentation normal, the labor may be left to the natural powers to terminate. If, however, flooding still continue, it might be well to inject, by means of a flexible gum catheter, attached to a Davidson's syringe, a warm, slightly styptic solution of persulphate of iron, between the detached portion of the placenta and the uterine surface.

In most cases where the above measures are resorted to, the hæmorrhage will cease, and there will be no need of haste. But if flooding *still* continue, and we cannot excite the womb to the requisite action—or if there be an abnormal presentation, we must render such aid as may be required according to the principles elsewhere laid down. Turning should be avoided,

if possible, or if indispensable, should be executed by the bipolar method, if that be applicable. The forceps, recommended by some, is objectionable on account of the difficulty of application in such cases, and the loss of blood likely to take place during the operation; but notwithstanding this, there may be instances where the use of this instrument is indispensable.

I have no doubt there are cases of placenta prævia which may be safely managed, in reference at least to the mother, without further interference than to secure the dilatation of the os uteri, where nature fails, unaided, to effect this, and to keep up the vigorous action of the womb when this fails. Nor do I think such management always imperils the life of the child beyond its usual risks in such a state of things. At all events, the life of the child is here a secondary consideration, as it is likely to be born feeble and anæmic, and therefore not very likely to pass through the usual perils of infancy.

Many years ago I had the sad misfortune to lose a very interesting young woman, in her third or fourth labor, in consequence of the complication now under notice. She had suffered repeated hæmorrhages before I was called finally for her relief. Following the directions of the then best authorities, I turned and delivered the child alive and with the utmost ease. Although, at the time, I thought the patient's pulse fully justified the measure, she collapsed, and I found it impossible to rally her, so that she died apparently from shock within an hour. From what I noticed about the moment I commenced the operation, I afterwards thought, had I let her alone, she would have delivered herself without my interference.

Some years afterwards, a case came under my treatment which I had no doubt was one of placenta prævia, although I had not made a vaginal examination. I had prescribed for hæmorrhage, occurring perhaps a month before her expected confinement, for which she could assign no cause. She was requested to let me know, if any, even the slightest recurrence should take place. Her husband called on me, perhaps two weeks after, to say that his wife had been flooding since the day before; that she had no pains (which I afterwards found to be incorrect), that the abdominal enlargement had so much sub-

sided since the former hæmorrhage, that she thought she must have been mistaken as to her condition.

As I was about to leave home, I gave him Apoc. can. pretty strong, to be taken at short intervals, and if the hæmorrhage did not shortly cease, he should by all means let me know. I sat up till after midnight, expecting and prepared to treat a case of placenta prævia. I was called up by 1 o'clock, A. M., by a messenger, who could tell me nothing of the case, but on my arrival I found the child had been still-born, before the messenger had been dispatched; from appearance had probably been dead since the former flooding. I found the membranes ruptured just at their junction with the placenta. The secundines had been expelled with the child.

The patient told me that not finding the medicine relieve the flooding, she had taken the doses in rapid succession, each of which seemed to increase her pains, till the whole contents of the womb were at once extruded.* She made a good recovery.

We need scarcely add that when the child and the after-birth are delivered, we should be careful to secure firm and persistent contraction. Give Bell. if symptoms of cerebral congestion ensue.

POST-PARTUM HÆMORRHAGE.

Hæmorrhage may occur immediately after the birth of the child, and before the delivery of the secundines, even where there has been nothing abnormal in the implantation of the placenta. This is generally owing to the presence of the after-birth, by which the womb is prevented from contracting, so as to close the mouths of the bleeding vessels. The placenta may be wholly or partially detached from the uterine surface. In either case, there are vessels patulous and pouring out their contents. They will continue to do so till the womb contracts and closes their open mouths, or these latter are temporarily plugged by coagula formed within them. This latter may hap-

* When in such cases, there is unreasonable delay in the passage of the head through the pelvis, the forceps may perhaps be available—at least should be thought of.

pen through partial stagnation of the circulation brought on by decrease of the heart's action through loss of blood. The arrest from this cause is, however, usually only temporary, so long as uterine contraction has not been fully effected. As soon as the heart rallies, and the circulation resumes in any considerable degree its force, the clots opposing a barrier to hæmorrhage are liable to give way, and alarming flooding again to set in.

In this state of things, we should as soon as possible empty the womb of its remaining contents. We need not here repeat the instructions elsewhere given for the delivery of the after-birth. It is, however, particularly important in this case, to second the tractile efforts of the hand within the internal organs, by the other hand placed over the womb externally, exerting a bearing down force, not only for the purpose of facilitating delivery, but to induce the womb to contract as its contents recede. This external pressure should be maintained for some time, until it is ascertained that there is no disposition to relaxation.

When the secundines are delivered and uterine contraction secured, hæmorrhage usually ceases permanently. This will not, however, always be the case. Sometimes, the womb again relaxes, and the flooding recurs with great violence. It is therefore important that the accoucheur should remain for some time with his patient, and before he leaves give particular instructions to the nurse how to proceed, in case such an unfortunate occurrence should take place in his absence.

If the womb do not contract when the after-birth is removed and flooding still continue, and if the usual compressing manipulations do not succeed, or if danger be imminent, it is advised to carry one hand up the vagina and elevate the lower segment of the womb, while the other hand applied externally forces down the fundus, so as to bring together the upper and lower regions of that organ, thus closing its cavity, and consequently the open mouths of the vessels. Where there is a disposition to relaxation of the womb after it has contracted, most writers advise the application of a compress over that organ, secured by a binder.

Dr. Hyatt, of North Carolina, claims to have frequently arrested post-partum hæmorrhage, either before or after the delivery of the secundines, in the following simple manner. "An india-rubber balloon, which may be bought at any toy-shop, is tied over the end of a Davidson-syringe nozzle and passed into the cavity of the flaccid uterus. It is then distended by warm or cold water; by this means we bring pressure to bear directly upon the mouths of the bleeding vessels, which effectually seals them, and renders further hæmorrhage impossible." If water be used in the above operation, we would by all means advise to use it warm, as we cannot but think that cold applications to the interior of the uterus shortly after delivery are, to say the least, extremely hazardous; not so much as regards immediate consequences, as those more remote. According to very respectable testimony,* the injection of water as warm as can well be borne (110°) into the uterus, is itself ONE OF THE MOST EFFICIENT MEANS of arresting hæmorrhage. In this latter operation, the pipe of the syringe should be carried up within the womb till near the fundus.

It appears from an article published in the *Archives de Tokologie*, for May, 1876, that Dr. Chassagny had resorted to an expedient for the arrest of hæmorrhage essentially the same as that of Dr. Hyatt given above; the latter gentleman, however, claims priority in its use.

If the above expedient be resorted to, we would suggest that after the india-rubber is sufficiently distended, the bulb of the syringe be detached and the finger of the accoucheur gently applied to the end of the tube, so that the water may be retained and gradually escape as the womb contracts.

Flooding will occasionally set in violently, as above intimated, some time *after* the delivery of the after-birth, even when the womb has seemed to be well contracted. Of course

* Dr. Athill and others. Dr. A., in a paper read before the Obstetrical Society of Dublin, details some interesting and successful experiments with the above expedient in the Rotunda Hospital of that city. He says he was induced "to try it in consequence of a letter written by Dr. Whitwell of San Francisco to Dr. Foley, of Boston, who is at present studying in this hospital."

relaxation in such cases has again taken place. Such an event, alternate contraction and relaxation, is believed, sometimes at least, to be foreshadowed by the character of the pains during labor. When the uterine contractions set in suddenly, soon attain their height, and then quickly subside, we may look for a want of permanent contraction after the parturient process is ended. In such cases we should endeavor to forestall this unfortunate circumstance, by the administration of remedies during labor. I have found small doses of Ergot given toward the close of labor, generally secure speedy and permanent contraction, and at the same time greatly diminish subsequent suffering from after-pains. We need hardly repeat the injunction that when the prognostic indication just mentioned is encountered during labor, the attendant should be specially watchful of the case, and remain as long as possible with his patient after her delivery.

Another premonition of flooding, to which we have before called attention, is an unusual quickness of the pulse. When this is observed to continue after the excitement of labor has somewhat subsided, we should be upon the look-out for flooding and provide accordingly. I met with this symptom once in a young woman after the birth of her first child, and suspecting hæmorrhage, I remained in the house for an unusual length of time, but finding no abnormal discharge, I was just about to leave, when I was suddenly summoned to the bedside of the patient. Perhaps the most alarming hæmorrhage I have ever witnessed, followed. It yielded at the time, to the measures employed, and the womb seemed to contract in a normal manner. The following night, however, I was again summoned on account of its recurrence in a very violent form. It again yielded, but the patient some days afterward seemed to be affected by septicæmic poisoning, and appeared likely to make a very bad recovery. After using several remedies with negative results, I gave *Ars. alb.*, 2d dec., with excellent effect. Unusual quickness of the pulse, with some hæmorrhage, and symptoms of shock should lead us to suspect laceration of the perineum.

Post partum flooding may generally be attributed to want of

complete and persistent contraction of the womb. This, as we have intimated, is sometimes due to mechanical obstruction, such as retained placenta, in whole or in part, and even clots formed within the uterine cavity may have the same effect. But this deficiency of contractile power may be owing to one or more, of several remote causes, having primarily no relation to that just stated. Sometimes it may be traced to pre-existing disease, giving rise to general debility, of which the womb, as other organs, partakes. Again it may be owing to exhaustion of the uterine power, from severe and protracted labor. It may, moreover, be caused by a too rapid delivery, a too sudden emptying of the uterus, so that its walls cannot follow up the receding contents. Besides very sudden delivery is usually attended by more or less of shock, in which the womb, in common with the whole organism partakes. When want of contraction follows the administration of chloroform, it is pretty uniformly laid to the charge of that agent, and hæmorrhage, in the opinion of some who have never used it, is almost an unfailing result. We will, hereafter, express our opinion upon this subject, and need not anticipate in this place. The action of the causes we have just referred to, sometimes give rise to a mechanical one, which, in its turn, tends to increase and prolong the hæmorrhagic condition. When the womb fails to contract, immediately after the extrusion of the after-birth, the blood, pouring into its cavity, forms clots, which in turn interfere with its complete closure, until it acquires sufficient force to expel them as foreign bodies.

Generally, in regard to the evils attending childbirth, it is better, if we can, to forestall and prevent them, than to suffer them to become developed, even though we should be successful in relieving them. Much may be done in this way in regard to post-partum hæmorrhage.

It is a good rule, as we have already said in the chapter on the Management of Labor, and here repeat for the sake of emphasizing it—it is a good rule, when the head of the child is born, to have an assistant, well instructed in the duty, to place the hand over the uterine tumor, and with firm pressure, to follow down the receding body as it passes into the world.

Nor should the hold be relaxed even when the body is born, but firm pressure maintained until the accoucheur himself is free to take charge. This simple expedient itself, we have thought, does much to secure contraction of the womb, the early expulsion of the secundines, and subsequent immunity from hæmorrhage.

But while we regard firm and persistent contractions of the womb the great prophylactic against hæmorrhage, and the only reliable means of its permanent arrest, when it has taken place, the homœopathic obstetrician is by no means restricted to mechanical manipulations to produce this condition. On the contrary, there may be existing at the time, a morbid condition of the uterus which may completely baffle all such efforts, and yield only to a well selected remedy truly homœopathic to that condition. The young practitioner should therefore thoroughly study the pathogenesis of all remedies likely to be available under these trying circumstances. This he should do, not at the bedside of the patient, and from a book carried in his pocket, to be used if necessity require; but in his private study, and previously and thoroughly—and then we have no objection to the book in his pocket as a reminder.

There is, perhaps, no situation in which the young obstetric practitioner can be placed, more trying, than to have in charge, without the aid of older counsel, a case of violent uterine hæmorrhage. On the one hand he feels his own reputation at risk—on the other the life of his patient. Fortunately, however, these cases do not so often result fatally, through their immediate consequences, as one would expect. Perhaps the secondary effects are, upon the whole, more to be dreaded than the primary. But we reiterate, let the young practitioner always be prepared to do the utmost to speedily arrest an unnatural effusion of blood.

The following are a few of the remedies particularly deserving attention in post-partum hæmorrhage, viz.: Apoc. can., Bell., Crocus, Ipecac., China, Secale, Trillium, Ergeron. There are still others worthy of study in this relation. We have, however, I believe, never gone beyond this list in the use of medicines, and have as yet lost no lives. In violent cases we

have almost always resorted to medication in conjunction with the mechanical measures just recommended.

When there is good reason to believe that clots have accumulated in the uterus, so as to prevent its contraction, efforts should be made to procure their expulsion. If firm pressure upon the organ do not effect this object, we may try Puls., and if this do not succeed, perhaps Ergot will answer our purpose. These remedies, however, should not be given at random: the one or the other must be selected according to the circumstances of the case, and which it would be useless for us to imagine and then depict—it must be taken as it occurs. If Ergot be given, it must be given in repeated doses of such strength as will ensure vigorous contraction, or else satisfy us that it is incapable of reaching the case.

When the womb, from its size, as felt through the abdominal walls, is believed to contain a large amount of coagulated blood, while yet the os and vagina are sufficiently dilated or dilatable, we are advised to introduce the hand and turn out the clots. This expedient may be necessary if hæmorrhage is still going on, and we have reason to believe that the measures we have already laid down may not succeed sufficiently soon in effecting their expulsion. It must be remembered that coagulated blood, if present in large amount, must be removed, if we would secure safe contraction of the womb. It has been advised to raise and seat the patient upon the chamber-vessel to effect this object, and we have known this measure to succeed. If hæmorrhage continue after the expulsion of the clots, we may try the injection of warm water.

Should we meet with a case of violent hæmorrhage which should resist such of the foregoing expedients as might be selected, and, indeed, any others we might adopt, and seemed to be progressing toward a fatal termination so rapidly that something more effectual must be done or the life of the patient be lost, an important question arises, shall we or shall we not use an injection of a solution of the per-chloride or per-sulphate of iron?

I am fully aware that Homœopathic physicians entertain strong prejudices against such measures, and I may truly add,

I am myself one of that number. Some very positively affirm that they have met with no cases that did not yield to homœopathic remedies, and I readily concede that they have been very fortunate. I will, moreover, add that I myself have met with *very* few. But yet every one who has had an extended experience must admit that cases do occur wherein a fatal result is so alarmingly imminent, that it is evident something must be efficiently done in a few moments, or the case will be lost. The patient is unable to give her subjective symptoms—can answer no questions—nay is absolutely speechless and almost pulseless, while flooding is still going on. Under these unfavorable circumstances, and ordinarily no little trepidation, whatever remedies may be really available, the physician has a very poor chance to select. Unfortunately we are sometimes compelled, as the best we can do, to choose between two evils, and it is certainly the part of wisdom to choose the less.

A solution of the perchloride of iron of very moderate strength, injected into the womb, has, in all cases reported, so far as my researches extend, immediately arrested hæmorrhage. This arrest, so far as I have noticed, has been permanent. In the very few cases in which I have resorted to this measure, such has certainly been the result. A very important question then arises, namely, are the ordinary or necessary consequences of the practice, such as to determine its rejection in every case of flooding, however violent or hopeless?

The hæmostatic action of the remedy is probably two-fold. By its irritating property it stimulates the womb to contract, and by its power as a styptic it coagulates the blood within the mouths of the bleeding vessels, and constricts the congested capillaries from which blood may be welling out into the cavity of the womb. From these two actions of the drug arise whatever dangers may necessarily follow its use. We will, for a moment, examine them. In the first place, as an irritant acting upon the internal surface of the womb, highly congested, and in a state of exalted nervous impressibility, it must be confessed there is some reason to dread serious inflammation (endometritis). Practically, however, if we may depend upon the reports of those most frequently resorting to

such injections, this does not often happen. Again, through the same property of the per-chloride, there is danger to be apprehended from another quarter. The injected fluid may possibly, through the Fallopian tubes, find its way into the peritoneal cavity, and excite severe, if not fatal, peritonitis. This risk may, however, be in a great measure avoided by using but little force in throwing up the fluid and providing for its easy return through the vagina. Its constringing power, moreover, probably sets up a barrier to its entrance. Through the styptic properties of the drug, danger may be apprehended from the size and quality of the coagula formed within the womb. Whatever amount of blood may be present there, when the solution of the perchloride is injected, if this latter be in sufficient quantity and of sufficient strength, will be coagulated and form very solid clots. The uterus, weakened by the loss of blood from the general system, may be unable, at least for a considerable time, to expel these from its cavity. Their solidity, and perhaps adherence, may oppose an additional obstacle to this result. Hence a ground of apprehension of septicæmia from their decomposition. The danger, however, from this source is probably not so great as might be supposed. The decomposition of the clots is most likely delayed by the very agent that produced them, the per-chloride itself, at least to some extent, acting as an anti-septic. Besides injections will arrest hæmorrhage effectually, when of a *far less degree of concentration*, than those generally employed, and thus their danger, whatever it may be, may be lessened, both in regard to their irritating properties, and their tendency to form solid clots, by extreme coagulation of the fibrine of the blood. So far as I have resorted to this measure for arresting flooding, I have used a solution merely of sufficient strength to produce a decidedly styptic impression when applied to the tongue, and yet the flow was instantaneously arrested.

The propriety of using injections of perchloride or per-sulphate of iron, has been very fully discussed by the different obstetrical societies of Great Britain. The weight of authority in these learned bodies, seems to be in favor of its employment, but rather as a last resort than as an ordinary expedient. From

a very limited experience with it, fortunately so, it is certainly only as such I would have recourse to it. But as "drowning men catch at a straw," I would rather employ it with all its risks, whatever they may be, than to be obliged in a few moments to lay my hand upon a pallid corpse. I would only add that the per-sulphate is perhaps, in most respects, preferable to the per-chloride, and is probably homœopathic to hæmorrhage. Finally, there is one other condition of hæmorrhage to which I think the foregoing expedient may be applicable, but these too only when other means have failed, and death seems slowly but surely advancing to seize his prey. Violent and exhausting flooding has already occurred, prostrating the patient to the lowest condition compatible with the continuance of life. We have given remedies which seemed to check the flow, but still there is from hour to hour and from day to day a continued drain, which nothing seems to arrest, and which is manifestly extinguishing the little spark of life which yet remains. In such cases, we should carefully examine both with the finger, and if necessary with the speculum, to ascertain if possible whence the hæmorrhage proceeds. It will likely be found to be from some laceration or abrasion, or it may be from a growth. If the latter, its removal at the time may be attended with too great risk to attempt, and in either case the injection as above will most probably, at least temporarily arrest the flow, gain time, and enable the patient to rally.

There is a form of hæmorrhage differing in no essential characteristic from those we have just considered, except that its occurrence is not announced by the usual unmistakable signs. The blood accumulates in the womb sometimes in large amount, but does not flow out by the vagina, and therefore the accident may not be detected until even dangerous effusion has taken place. This has been called, not with very great propriety, *internal hæmorrhage*, simply because it is not attended by the usual external manifestations, while strictly speaking, all uterine hæmorrhage is internal.

It is important that the accoucheur should early detect this secret process, since owing to the expansibility of the womb just after delivery, a vast amount of blood may accumulate within its cavity.

After the child is born and the after-birth removed, or even before this latter is accomplished, if the pulse be found quick, the womb but little or not at all contracted, or on the contrary it may be rather enlarged, if upon examination no external hæmorrhage or very little appears, if no laceration of the perineum be detected (if such exist there will be hæmorrhage), if the patient manifest signs of shock, suffers from difficulty of respiration and is thirsty, we have reason to believe that internal hæmorrhage is going on. The indication is to remove the accumulation within the womb and compel it to contract. We have already given in detail the means to be employed for effecting contraction, and if we can secure this, we secure at the same time the expulsion of the blood contained within. But if we cannot induce the womb to contract and expel its contents without unnecessarily wasting precious time, it is proper we should introduce the hand and turn out the clots, and then renew our efforts to secure contraction. We need not hesitate to turn out the blood, whatever may be its quantity, for it is already thrown out of the circulation, and can therefore do nothing toward sustaining life. On the other hand, by its presence it prevents contraction, and thereby invites still further loss. If great exhaustion have taken place, use stimulants very cautiously. The subsequent treatment of such cases differs in no important respect from that already given, only we should be especially watchful to keep up permanent contraction.

It occasionally happens, that shortly after delivery, even where no premonitions have been noticed, a frightful hæmorrhage sets in, rapidly undermining the vital powers, and not unfrequently terminating in sudden and unexpected death. I have not myself been so unfortunate as to meet with a case of this kind, but have repeatedly known them to occur. Such cases are always attended with extreme danger, from the suddenness and violence of the onset, from the perturbation they usually excite in the attendant and friends of the patient, as well as too often the absence of the appliances necessary successful to meet the urgent indications.

A method of arresting uterine hæmorrhage has lately been proposed, which I think, when it is available, would answer

well in cases such as above described. I am sorry I am unable to give the name of the individual by whom it was first practiced and recommended to the profession. It consists in applying pressure upon the aorta upon the principle of the tourniquet. This is effected in several different ways, according to the requirements of the case in hand. If the woman, for instance, be of relaxed muscular fibre, attenuated abdominal walls, and the internal viscera easily movable, the womb and bowels may be partially pushed aside, and the points of the fingers thrust deep into the tissues until they press upon the great aorta with sufficient force to arrest the hæmorrhage. Their position and pressure should be thus maintained till there is no longer disposition to recurrence. When the womb cannot be easily turned aside, and where it presents considerable solidity, it may, like the pad of the tourniquet, be pressed upon the artery by force applied externally. Again, pressure may be exerted upon the vessel through the posterior wall of the uterus by the hand introduced into that organ. Manipulations performed by one hand in the rectum, and the other applied externally, or within the womb, have also been recommended.

The advantages of this method, when applicable, are the celerity with which it may be applied and the promptness of its effects. It requires nothing but what is always at hand. These advantages are very important, as the cases we have in view admit of no delay. A short time spent in looking up appliances, and life is extinct. However strong our confidence in well selected medicaments, there is no time for them to act, scarcely enough to administer them.

On the other hand, where there is extreme tenderness of the abdominal walls, as there not unfrequently is, the patient would scarcely bear the requisite amount of pressure to be effective. Again when the abdominal parietes are very thick, either from heavy and dense muscular fibre, or the presence of much adipose tissue, or when the omentum is loaded with fat, it will not be easy to make sufficient pressure upon the vessel to answer our purpose.

I need hardly add that the point selected in the course of the aorta, to which to apply pressure, should be sufficiently

high to arrest the current in the direction of the womb, nor need I say that the method, if successfully executed, will have a doubly beneficial effect, first, by arresting the unneeded flow to the womb, and, secondly, by sending an additional amount of blood to the brain, which is, perhaps, already suffering from anæmia.

A very interesting paper will be found upon this subject in the *Obstetrical Journal of Great Britain and Ireland*, Vol. VI., No. 11, p. 704, by G. de Gorrequer Griffith, L.R.C.P.

d) **Post Partum Secondary Hæmorrhage.**—It has long been a matter of surprise to me that obstetrical writers have devoted so little space to the subject indicated by the above title. Its importance certainly merits more attention than has thus far been accorded to it. Of all the writers, to whose works I have had access, Dr. Barnes, in his "Obstetric Operations," does it most justice, and here, as everywhere, is very instructive. Under the head of "Secondary Puerperal Hæmorrhage," however, he treats of several forms which have not their origin within the uterine cavity, as, for instance, those arising from laceration or abrasion of the cervix, laceration of the vagina, perineum, etc. It is our present design, however, to speak only of hæmorrhage having its source in the internal surface of the womb, and such as occurs not earlier after delivery than the second or third day, and may take place at a much later period.

This form of hæmorrhage is peculiarly dangerous from attendant circumstances, and from the pathological condition upon which it often depends. When hæmorrhage occurs shortly after birth, some symptoms usually herald its approach,

"Coming events cast their shadows before,"

and the prudent accoucheur remains with his patient, provided with the best means at his disposal, to ward off approaching danger. Not so, however, when secondary hæmorrhage takes place. Its occurrence, perhaps, is not anticipated; the patient is alone with the nurse or the members of her family, it may be unsuspectingly enjoying quiet sleep, so necessary to her restoration, when waking suddenly, she finds herself immersed

in a pool of her own blood. The doctor is hastily sent for, but he lives miles away, and is, perhaps, not at home when the messenger arrives. Thus, before anything is efficiently done, the patient has become exanguinous and pulseless, and if of a feeble constitution, may have sunk below the rallying point.

Another source of peculiar danger is found in the liability of the blood-clots resulting from the hæmorrhage to become putrid within the womb, and thus give rise to septicæmia, often in its worst form. It has seemed to me that the womb has less power to expel foreign bodies after secondary hæmorrhage, such as we here contemplate, than after that which may occur shortly subsequent to delivery. The blood-vessels, too, being so thoroughly depleted of their normal contents, the more readily absorb any fluid within their reach, be it noxious or otherwise.

There are also morbid conditions sometimes co-existent with this form of hæmorrhage, which may indeed have contributed to its occurrence, and which, at least, add to its danger. There may, for instance, have been pre-existing circumscribed inflammation of the internal surface of the womb. It may have constituted a factor in the production of hæmorrhage; but be this as it may, when it has taken place, it very considerably augments the danger of its results. The patient then not only suffers exhaustion from the loss of blood, but from the depressing, consuming effects of local inflammation. The citadel of life is thus assaulted at different points, and, in consequence, is, too often, doomed to fall.

If, moreover, it be true, as some have supposed, that secondary hæmorrhage sometimes has its origin in a peculiar dyscrasia of the blood itself, in consequence of which it is thinned in its consistence, or its coagulability is diminished, or both, for they are likely to be associated, it is manifest that the arrest of the flow by Nature's usual method would be more difficult, and the consequent danger of the result increased. The impaired state of health, too, necessarily concomitant with such a dyscrasia of the blood, would render the patient far less likely to rally from the extreme exhaustion of profuse hæmorrhage.

Fortunately cases of secondary post partum hæmorrhage are comparatively rare, for it mostly depends upon causes which the careful practitioner may avoid. We will at present undertake to enumerate but a few of the more prominent of these, and subsequently endeavor to indicate, as far as we can, both prophylaxis and remedy.

Among the most fruitful sources of this form of hæmorrhage may be mentioned, portions of the placenta or even membranes left behind within the womb. If these portions be detached and escape the hand of the operator, so as to be retained, they are, perhaps, less likely to produce this disastrous result than if left undetached. In the former case they merely act as a foreign body, and as such may indeed produce irritation upon the internal surface of the womb, and, consequently, invite an unwonted afflux of blood to the part and thus encourage hæmorrhage. But in the latter they furnish an outlet by which the vessels of the womb pour out their contents into the cavity of that organ. Besides, if any considerable portion of the placenta remain, by its bulk it prevents the uniform contraction of the womb, and, consequently, the perfect closure of the mouths of the maternal vessels, so essential to safety from hæmorrhage.

When speaking of Adhesion of the Placenta, we have referred to the difficulty occasionally encountered in our attempts to remove the entire mass, and of the great risk of hæmorrhage where we fail to effect this. We need not here repeat what we have said, but will speak only of the treatment of the hæmorrhage which, sooner or later, is likely to occur in these unfortunate cases.

And here I would refer the reader to the remedies spoken of when treating of hæmorrhage in a former chapter of this work. These remedies are available also here. But secondary hæmorrhage from the cause we are now speaking of, generally occurs, as we have already said, in our absence, and often to an extent, before we reach the bedside of the patient, that she is unable to give the subjective symptoms of her case. The flow perhaps still continues, and it is manifest, unless soon arrested, the patient's life must be sacrificed. In such case I would not hesi-

tate to inject, as an extreme resort, the perchloride or persulphate of iron, diluted very considerably below the degree of concentration used by Dr. Barnes, or as I have elsewhere said, just strong enough to produce a decidedly styptic impression when applied to the tongue.

Another cause of secondary post partum hæmorrhage we would notice, is the retention of blood-clots within the uterine cavity. From various causes it sometimes happens that the uterus does not firmly contract after delivery, and blood still oozing from the patulous mouths of the vessels, forms a coagulum which the deficient powers of that organ are unable to expel. This coagulum may increase in size by continued accretions, and thus in turn prevent the further contraction of the womb, and the firm closure of the mouths of its vessels, and in the meanwhile acting as a foreign body produce irritation. This will cause an increased flow of blood to the womb, while under its distending force, the imperfect closure of the vessels may give way and more or less alarming hæmorrhage ensue. To forestall and prevent the accident from this source, we should, of course, by a resort to the means elsewhere pointed out, secure perfect contraction of the womb before leaving the patient after delivery, and from time to time see that such contraction is maintained. When clots are suspected to exist in the womb shortly after delivery, and which that organ seems unable to expel, obstetrical writers, as we have before said, advise us to introduce the hand and turn them out. This could not be done, however, when secondary post partum hæmorrhage occurs, inasmuch as the os uteri would then be closed, so as not to admit the hand without violence. But even then, *Secale* may so stimulate the womb, as to secure the action necessary to expel any clots it may have retained for want of vigor.

Mental emotions sometimes give rise to secondary hæmorrhage. This is brought about indirectly through their influence upon the heart. We may suppose, in such cases, that the mouths of the maternal vessels are not yet firmly closed, and when from fright or other emotion, the heart is excited to unwonted action, the increased impetus given to the blood causes it to break through the imperfect barriers, at the mouths of the

uterine vessels, opposing its exit. Common sense prescribes as the best prophylaxis against accidents from this cause, that the patient, especially if she be of a nervous temperament, should be scrupulously secluded from all sources of emotion or excitement.

Derangement of innervation, which controls the contractile powers of the womb, giving rise to irregular, unsymmetrical contraction of that organ after delivery, constitutes another source of secondary hæmorrhage. The womb, when its power is intact, usually assumes a globular form—on the other hand, when impaired in the manner referred to, the form assumed may be cylindrical or otherwise abnormal. Such contraction, but an imperfect safeguard against hæmorrhage even at the first, is apt to relax in a few days, and may be followed by profuse flooding. To correct this defective contraction, and thereby forestall its consequences, we would have confidence in minute doses of Ergot, if the difficulty have not been caused by abuse of that drug.

Another derangement of innervation or nervous function giving rise to secondary hæmorrhage, may yet be mentioned. It is that in consequence of which an equilibrium of the circulation is no longer maintained. There is undue afflux of blood, first to one organ or part, then to another. The womb is liable in its turn to become the seat of this afflux, and the consequence sometimes is profuse, and even fatal hæmorrhage.

The following case will illustrate this rather rare phenomenon. It occurred perhaps more than twenty years ago. A young woman of low stature, primipara, was in labor for at least three days, owing at first to deficiency of uterine contractions, and afterwards, in the second stage, to the unusually large size of the child. She was delivered without instrumental interference, and made a reasonably good recovery up to the tenth day, when, according to custom, she began to sit up out of bed. Her mother then, unfortunately gave her some rice pudding at her dinner, prepared with milk—the latter an article which had always disagreed with her. This imprudence brought on violent cholera morbus, and the irritation extended to the womb—already susceptible from its contused condition

in consequence of an unusually hard and protracted labor. The vomiting and diarrhœa subsided under treatment, but in the course of two or three days her face at one time would become so congested as to be almost of a purple color—then the lungs would be so oppressed as to cause extreme dyspnœa, while the face would become pale. Finally the afflux of blood was determined to the womb, followed by a hæmorrhage which at once brought her to death's door. This occurred in the night; I was not present, but an experienced physician and his son, who had been called to my aid, were with her. She expired the following evening.

We have before observed that the physician, especially in the country, is seldom present during the most violent stage of the hæmorrhage of which we speak. Should he be, and the same accompanying symptoms present themselves as in the hæmorrhage occurring just after delivery, the remedies indicated in the one case, as we have before said, would be also proper in the other. But in the majority of cases we should simply witness the violent gush of blood and the rapid sinking of the vital powers, demanding the immediate arrest of the flow, if we would save the life of our patient, or prevent her sinking into that depth of prostration from which too often there is no return. Here the various expedients for producing contraction of the womb, if that be found relaxed, as is mostly the case, immediately suggest themselves, and most of them need not interfere with the most skilful medication simultaneously carried on. It is an excellent plan for country practitioners to instruct a nurse or other woman, in every neighborhood, within the bounds of his practice, how to use the more simple of these expedients, such as kneading and compression of the womb by means of the hand or by pad and binder, or even the introduction of the tampon. By so doing the temporary arrest of the hæmorrhage would often be secured, the ruinous loss of blood prevented, and I verily believe lives, in many instances, saved, which are now lost for want of such knowledge.

If the physician be present, other means failing, he may have recourse to the introduction and inflation of the gum elastic toy balloon elsewhere spoken of. It may be remarked

here, that we cannot expect in these cases, so much from appliances calculated to promote uterine contraction, as in hæmorrhages occurring earlier after delivery, as the contractile power of the womb at this late period and under existing circumstances may generally be supposed to be very deficient.

Before closing my remarks on hæmorrhage, do I owe an apology for having so largely recommended mechanical, chemical and physiological appliances? If so, it has ever been my wish "to give a reason for the faith that is in me," such as ought to be sufficient to satisfy every *candid* mind. Some, I know, profess to treat successfully all hæmorrhages by simple medication—by remedies, perhaps, of the forty or hundred thousandth dilution. As I wish publicly to question no man's assertion, although there is, perhaps, no truth better established than that such assertions are *sometimes* incorrect, I would simply say that all are not equally skillful in selecting remedies and, of course, not equally successful in their employment. I have already spoken of the difficulty, in many instances, in ascertaining symptoms such as would guide us in the correct selection of a remedy if, in the case before us, such there be. I readily admit that a diseased condition may be an important factor in hæmorrhage; but when this is the case, that disease is, perhaps, mostly of a chronic character, and not likely to respond to a remedy with sufficient promptness to save the patient's life. This should be the great object of the physician's aim, no matter by what means attained.

If called to a man whose femoral artery had been severed and his life blood flowing rapidly away, the idea of medication would probably hardly occur to us. Common sense would suggest other means of arrest. The case of a woman flooding after labor is not so unlike to this, as not to suggest similar means of relief.

I must say, however, that by far the larger number of hæmorrhages I have encountered, have ceased after medical treatment and the simpler adjuvant means, and when I am convinced that medicine alone will answer in every case, I will be among the first to use it to the exclusion of all other means.

LACERATION OF THE PERINEUM.

This, although not reckoned amongst the more dangerous accidents of parturition, should nevertheless be guarded against with the utmost assiduity, on account of the distressing consequences it sometimes entails. It is, however, not without danger, as, in its worst forms at least, it exposes an extensive raw surface to the action of the discharges, and, by absorption, may give rise to fatal septicæmia.

In order to prevent this accident, when that is possible, we should, in the first place, inquire into the causes usually concerned in producing so unfortunate a result. Of these authors have enumerated the following as the principal, viz. :

1. Neglect to support the part while the head is passing.
2. Injudicious or improperly directed support, which is regarded by most as worse than no support at all.
3. Rigidity of the perineum, on account of which it fails to yield under the pressure of the head. This is most likely to occur in primiparæ, and especially those somewhat advanced in life when they give birth to their first child.
4. Extreme uterine action propelling the head violently against the perineum, without giving it sufficient time to yield.
5. Large size of the head of the child requiring extreme distension before it can pass the outlet.
6. Fatty degeneration of the muscular structures composing the organ in question.
7. The sudden extension of the limbs of the patient from their usual flexed position, just as the head is held within and about to pass the vulva.
8. Misdirection of the head from defective formation of the parts, whereby, instead of being propelled forward toward the outlet, it takes a direction backward toward the coccyx, thus spending its force upon the posterior part of the perineum.

In reviewing the alleged causes of the accident under consideration, we are compelled to say, in regard to the first, that we doubt extremely whether support of the perineum be necessary, except possibly in very rare and they, perhaps, unrecog-

nizable cases, and whether in nearly all it does not tend to bring about the very accident it was intended to prevent. When we contemplate the wonderful provision the Creator has made for carrying the process of parturition through its earlier stages, we can hardly suppose he has left it so defectively provided for at its close, as so much to need our bungling aid, that it cannot be safely completed without it. But throwing aside the argument from analogy, if we, for a moment, reflect upon the manner in which lacerations usually take place, we will, I think, equally arrive at the conclusion that support can do nothing to prevent them—nay, may even favor them, by interfering with the normal yielding of the tissues. Lacerations usually commence at the posterior commissure, and are caused by the wedge force of the head, which tends to separate *laterally* the labia. When the rupture begins at the commissure, it runs backwards under the influence of this lateral force, following the raphe or a line near and parallel to it. But this force is not acting in a direction opposed to that of pressure or support, and, therefore, capable of being controlled or modified by it, but in a line across or at right angles to that of the support, and, therefore, entirely beyond its power to hold in check. I can conceive of no form of laceration, except, perhaps, the central, that could be prevented by perineal support, as usually advised. I should, perhaps, say that we are directed by authors generally, to lay the ends of the fingers upon or near the point of the coccyx and let the whole length of the palm lie in a forward direction upon the perineum. This method of support may, to some extent, counteract central laceration, that is, where the head perforates the perineum midway between the posterior commissure and the anus; but this form of the accident is extremely rare. Even this might be more effectually prevented by other means.

When there is extreme distension of the perineum and labia, the outlet refusing to dilate with sufficient rapidity to let the head pass, while the child is propelled by a powerful “vis a tergo” from the energetic action of the womb, I am inclined to think something might be done to prevent laceration, by applying both hands, so as, with gentle firmness, to embrace

the tumor formed by the head, as covered by the structures of the mother, a little way back from the circle formed by the distended labia, and drawing the structures somewhat forward. The hands, thus applied, would act as a hoop or band to support the endangered tissues. Dr. Goodell advises us, where we apprehend laceration, to insert a finger of the left hand into the anus, to draw the tissues forward, while several fingers of the right hand are firmly applied in front of the head, to retard its advance. We need hardly say this would be most repugnant to patient and physician.

It must, however, be admitted that authors are, as yet, divided upon the necessity or utility of perineal support during the last throes of labor. The older writers generally strongly advocate its use, and even among the most recent ones there are those who still insist upon its importance. Dr. Thomas More Madden, of Dublin, in a paper contained in the May number, 1872, of the *American Journal of Obstetrics* (on Lacerations of the Perineum, Sphincter Ani, etc.), has tabulated a series of cases which had come under his observation—a large proportion of which he attributes to neglect of the perineum, and, of course, maintains the utility of its support. On the other hand, Leishman, in his work on the “Mechanism of Parturition,” denounces it. The latter claims that the accident has not happened in his hands more frequently than in the hands of others of greater experience and ability than himself, who uniformly resort to perineal support. Dr. Grailey Hewitt, a high authority, contends that not only is the practice quite unnecessary, but very often it is absolutely mischievous. Dr. Meadows, a quite late writer, in his “Manual of Midwifery,” says: “My own opinion is, that when the head has had fair time gradually to stretch the perineum and surrounding structures, there is no need whatever for this, to say the least, most unpleasant proceeding.” He admits, however, that in the opposite state of things support may be of use.

But while we would reject the neglect of support as a frequent cause of lacerations, and propose a very simple preventive for those arising from that which is termed *injudicious*, namely, to omit support altogether, *rigidity* of the perineum as a fruitful source of the accident, deserves more serious attention.

It was the custom of the older allopathic physicians in such cases to resort to blood-letting, tartar emetic, and the like. These remedies are objectionable, if for no other reason, because they reduce the strength of the patient, and thus disqualify her for her important functions, to say nothing of the extreme discomfort which they produce. In other words, although these may to some extent relax the perineum and diminish its resistance, they at the same time lessen the uterine power in a perhaps still greater ratio, and although the danger of laceration may be reduced, the length and discomfort of the labor are likely to be greatly increased. The use of lobelia, which has been more recently recommended, if pushed to the point of nausea, comes under the same category and is open to the same objections. If it be found to produce relaxation short of its nauseating and debilitating effects, as I believe some assert that it does, it may prove a very useful remedy in this state of things. I have used the tincture of Gelseminum as I thought with favorable results, but my experience with it has not been sufficiently extended to enable me to speak positively in its favor. Warm sitz-baths are likely to do good, and as I cannot conceive of any bad results likely to follow their use, unless in cases where they might encourage hæmorrhage, they might be resorted to when more powerful means are not available. Inunction with lard and prolonged rubbing, as advised by Dr. Clay, may be tried.

When, however, the uterine action is very moderate, or even defective, no harm, so long as this state of things exists, can result from rigidity of the perineum. Under the moderate action of the womb it is likely sooner or later to yield. When the head comes to rest upon this structure, and the rather feeble action of the uterus seems unable to overcome its resistance, I would recommend the manipulation I have fully described when speaking of "Retarded Labor."

But it is when rigidity of the perineum co-exists with violent uterine action, that we are to expect danger of laceration of the perineum and surrounding structures. Here, fortunately, we have one of the most efficient and reliable of remedies for the correction of both these evils. Singly, so far as danger to the

perineum is concerned, they are not much to be dreaded—combined they should always excite our apprehensions. The remedy to which I refer is chloroform. This, if judiciously and understandingly administered, not only moderates *excessive* uterine action, but softens and relaxes all the maternal structures which are concerned in parturition, the perineum included. One of the great advantages of chloroform is that it holds in check reflex action, just at the moment when the parts are most in danger of laceration. Who has not noticed that, in sensitive women, when the head is just ready to emerge, the sensation caused by its pressure calls forth such violent, involuntary efforts, that it must pass, though all opposing structures should be driven before it. Chloroform saves all this. Under its influence we have observed the head to be retained for some moments, even within the embrace of the distended labia, the patient being wholly unconscious of its presence there. In order, however, to secure such results, it is necessary that the effects of the chloroform be deepened toward the close of labor to almost complete anæsthesia. This may be done, we think, in all suitable cases, with almost entire immunity from danger.

Whether there be any homœopathic remedy capable of mitigating the excessive pains of labor, I am not, from any experience of my own, able to decide. I know it is claimed that there are such, but whether they succeed in the hour of trial is quite another matter. If the *severity* of the pains arise from a diseased condition, then it is probable such remedies may be found. If, for instance, as M. Beau professes to believe, the pains of labor are, for the most part, a lumbo-abdominal neuralgia, I would expect some relief from the arsenite of copper. Yet we must not confound the pain with the action of the uterus. They usually co-exist, but are not the same thing—they are separable. It is possible for the most energetic action to go on, while there is comparatively little pain—the remedy therefore which may control the pain does not necessarily diminish the violent contractions of the womb.

The preventive measures we have already detailed apply also to those cases where there is danger of laceration from other causes, which we enumerated at the outset, but have not

considered *seriatim* in the course of this chapter. If the head, from malformation, be directed backward upon the perineum, assistance may be afforded by proper manipulation tending to carry it forward toward the outlet.

Again to prevent the accident from sudden extension of the limbs when the head is about to emerge, an assistant should take hold of and firmly support and elevate the upper knee (the right), and in the absence of such aid, a large roll of something light and soft should be placed between the limbs.

But supposing after all our precautions, or before our arrival at the bedside of the patient, laceration may have taken place, what is then to be done? This is certainly a most important question, and before answering it, we must take into account the extent of the injury.

Prof. Tarnier, the annotator of Cazeaux, divides these lacerations into three grades, incomplete, central and complete. "They are incomplete, when beginning from the vulva they do not involve the sphincter of the anus; central when the rupture occurs between the vulva and anus, without involving either of these openings; complete when the vulva, perineum and sphincter ani are torn, together with the recto-vaginal partition to a greater or less height." Prof. Tarnier maintains that in both the incomplete and central varieties of the accident, it is best to abstain from all operations as not only unnecessary, but possibly injurious. Dr. Madden, of the Dublin Lying-in Hospital, advises quilled sutures of silver wire or carbolized catgut to be introduced *immediately* after the accident has occurred, and to be removed in forty-eight hours. This is his practice in all forms of serious rupture. He insists much upon the early removal of the sutures, and believes that adhesion has generally taken place in that short time. According to Prof. Tarnier even complete laceration will often heal without operation, but in such cases there can be no doubt but Dr. Madden's course is the most prudent, unless the condition of the patient's health should make it advisable to postpone the operation. When the sphincter ani is not involved, and we decide to omit the sutures, the knees should be kept in close proximity either by the will of the patient or secured by a bandage. A small

compress saturated with a solution of tincture of calendula, or carbolic acid, when the discharges smell badly, should be firmly applied to the wound, and retained by means of a T bandage, care being taken that the compress should not be so large as to wedge the parts asunder. The most strict regard to cleanliness should be observed. The patient should not be allowed to walk about till the healing process is completed, or nearly so.

There is reason to believe that this accident often occurs to considerable extent, when it is either not detected by the attendant, or if known to exist the patient is not informed. These cases, if such there be, recover spontaneously more or less perfectly.

When attending a case of labor, if the uterine action have been very intense, the perineum rigid, the head somewhat suddenly extruded, and shortly after the child is born the patient manifests symptoms of severe shock, such as an extremely quick and feeble pulse, dyspnœa, a sensation of sinking, etc., there is reason to apprehend that an accident of this kind may have happened, even though it may not before have been detected. Careful examination should at once be instituted, and if rupture have taken place, such measures should be promptly adopted as the nature and extent of the injury may seem to demand.

In the first place we should resort to means to relieve the patient from the shock of injury. If there be hæmorrhage from the wound or womb, we should use means to arrest it as speedily as possible. For uterine post-partum hæmorrhage we have as remedies, *Apocynum cannabinum*, *Trillium pendulum*, *Erigeron* and others whose special indications should be carefully recalled.

For that occurring from the laceration, the best remedy will be to bring the edges of the wound together, and secure them in contact by a compress, retained by a suitable bandage. The compress should not cover the outlet, otherwise the usual discharge from the womb will be prevented and accumulation take place. For the extreme prostration, camphor may be given by olfaction, or if it be very alarming, stimulants, as wine or brandy, may be administered, being careful to avoid excessive reaction.

TOXÆMIC PUERPERAL DISEASE.

Within this term we include all those forms of puerperal disease which, in the present state of our knowledge, we regard as arising from an agent acting upon and changing the character of the blood of the patient; whether this agent may have had its origin in septic matter generated within her tissues or be derived from without; and, in the latter case, without regard to its particular source.

During labor there are doubtless few, if any, cases in which the parts concerned entirely escape injury. They are subject to contusions, abrasions and lacerations, some or all of which would doubtless very generally be found if the necessary examinations were made. They sometimes, as we all know, take place to a very serious extent. These injuries are liable to be followed in the puerperal woman, as in others, by traumatic inflammation. Under favorable circumstances, however, this may pursue a mild course and reach a fortunate termination, differing in no essential particular from that arising from wounds in general. As this affection does not fall within the limits of the subject which will now engage our attention, we will take no further notice of it. We will only here remark that all abrasions and lacerations—all breach of continuity of surface whatever, afford an open door for the entrance of septic matter, which may be brought into contact with them, until they are protected by the reparative process.

But the course of inflammation occurring in the puerperal woman is, unfortunately, not uniformly favorable. It is not always followed by speedy subsidence and healthy repair of the injury. It frequently assumes a much more serious character. From the prostrated, adynamic condition, which often follows labor, sometimes even precedes it, inflammation, resulting from injury, may assume a low grade, tending to sloughing and the discharge of a putrid, sanious fluid (itself, perhaps, the result of a previously acting blood poison), which, by absorption, is capable of still further contaminating the blood and thus giving rise to all the alarming phenomena and too often fatal consequences of toxæmic disease. Nor is this the only

source of blood poison originating within the organs of the woman. On the contrary, blood clots retained within the womb or vagina, portions of the placenta, or even the lochial discharge, when putrid, may act in a similar manner.

There seem to be two factors necessary to the production of toxæmic puerperal disease. The one is found in the peculiar susceptibility of the puerperal woman;—the other in some agent capable of acting, at least in her present condition, as a blood poison. Wherein this susceptibility consists, has by no means been demonstrated to the satisfaction of all. Some have supposed that it has its origin simply in the prostration succeeding labor. If, by prostration, be meant merely the reduction of nervous or muscular power which follows all ordinary cases of labor, the theory is inadequate to an explanation of the phenomenon. But may we not suppose that when any cause, of whatever nature, so reduces the vital forces so that the catalytic action concerned in carrying on the processes of life is, for the time being, held in abeyance, that of the morbid agent, namely the blood poison, gains the ascendancy and develops the disease in question, especially as the condition of the blood, peculiar to pregnancy and the puerperal state, abounding in albumen, may render it more liable to its action. It is probably this latter circumstance which so modifies the operation of the morbid agent as to produce what we recognize as *puerperal* toxæmic disease.

Some maintain that it is through breaches of continuity in the tissues of the woman alone that septic poison can be admitted, at least in sufficient amount to produce disease. But as blood poison in other cases can gain admission by other avenues, so as to produce its full effect, perhaps we are not as yet prepared to deny the possibility of this happening in the case of the parturient woman.

When the vital powers of puerperal women remain in sufficient vigor after labor to rapidly repair injuries sustained during that process, before or by the time septic matter is formed, an efficient barrier is set up against it, and absorption, to any considerable extent, at least, is prevented. In the opposite state of things, however, septic matter may be taken up, but

even then, unless in overpowering quantity, serious disease may not result. The powers of the organism may still exist in sufficient force to resist and ultimately expel the blood poison. But if, through the action of some one or more of the ordinary debilitating causes, including mental emotions, atmospheric and telluric influences, etc., the activity of the catalytic force concerned in carrying on the vital processes of the system, be so reduced that it is no longer capable of holding in check the similar force which the blood-poison tends to exert, then the latter becomes predominant and disease triumphs over healthy vitality, the blood is "touched corruptibly," and all the phenomena of toxæmic disease are developed.

Billroth, I believe, claims to have demonstrated that absorption cannot be effected by wounds, except in a recent state, or when the fluid to be absorbed has the power of dissolving their protective covering, so as to present a fresh surface. Be this as it may, it is certain that absorption to the extent of producing serious disease does not always take place when putrid matter is contained within the genital organs of the woman. We often meet with cases where blood-clots are expelled from the womb in a state of decomposition, as evidenced by their odor, and when the lochia is highly offensive, and yet there is but little, if any, departure from normal convalescence. Even retained placenta is sometimes thrown off in a very putrid condition, and yet the patient afterwards makes a reasonably good recovery.

But when the placenta is for some time retained, or when bloodclots undergo putrefaction within the womb, toxæmia, in some of its forms, not unfrequently results. This is especially liable to happen when exhausting hæmorrhage has taken place, as it often does when any portion of the placenta remains undetached within the womb. The danger of this result is here increased by twofold causes. In the first place, the vessels being emptied of their normal contents, fluids within reach of the absorbents are greedily taken up. At the same time the powers of the system to resist the deleterious action of morbid agents are greatly depressed, through the debilitating effects upon vital action by the loss of blood.

But the agent employed in the production of toxæmia does not always originate within the patient herself. On the contrary it is often derived from other sources. It may be introduced into her organism by contact, through the physician or nurse. When the attendant has had in charge a patient laboring under this disease, especially if he have had occasion to make vaginal examinations, he may readily convey the poison to another by his hands. It would seem that this effect may be produced where the utmost care has been taken to cleanse the hands, and even to throw off the clothes worn when in the presence of a patient suffering from toxæmic disease. The case of Dr. Rutter, of Philadelphia, is often cited, whose practice, notwithstanding the utmost precautions on his part, was so constantly followed by the disease, that he retired for weeks into the country, but, upon his return, met with a repetition of the same disasters.*

The contagion of certain other diseases is believed by many to be capable of producing puerperal toxæmia in the lying-in woman. Such is that of malignant erysipelas, typhus and typhoid fevers. So frequently is what is usually termed child-bed fever encountered during an epidemic of erysipelas, that they are by some considered essentially the same disease, only modified by different circumstances. Such conclusion we think hardly sustained by general observation. It would seem that puerperal women may have attacks of genuine erysipelas, in which all the distinctive symptoms of that disease are fully developed, unaccompanied by the peculiar symptoms of puerperal toxæmia, and without the fatality of that disease. The same may be said of scarlet fever.

It would seem, nevertheless, pretty certain that the contagious emanations, whatever they may be, from *malignant* erysipelas, are capable of producing the disease under consideration, in those who may be in a condition favorable to that result. Indeed, the disease known as malignant erysipelas, may be but a form of what is termed pyæmia, and which is but a

* I have seen it stated that Dr. Rutter suffered from ozæna, and it was surmised that this might have been the source of the trouble.

modification of toxæmic disease, and therefore more nearly related to puerperal toxæmia than to ordinary erysipelas.

It cannot be denied that the same morbid agent may produce different morbid phenomena in different individuals, according to their peculiar susceptibilities. Several persons, for instance, are caught out in a drenching shower. Their susceptibilities to disease are different, we are unable to say why or wherein this difference consists. One perhaps suffers, in consequence, from acute bronchitis, one from pneumonia, one from diarrhœa, another from dysentery, another from neuralgia, another from rheumatism, and some perhaps escape uninjured. Here the morbid agent is the same, the subjects apparently similar, but the results very different. We observe something like this also in the proving of our drugs, in the different symptoms evolved by different provers.

An epidemic of puerperal fever lately occurring in the Philadelphia Hospital has been reported, which could not be attributed to the contagion of erysipelas, for no case of that disease had for some time previous been in any of the wards, but which is said to have manifested the tendency to produce erysipelas in those not liable to puerperal fever. It is from this apparent relationship between the two diseases, namely, erysipelas and puerperal toxæmia, that, as before intimated, some have supposed the latter to be merely a modified form of the former. This relationship has, however, been strenuously denied by others; and it is but proper to say that preconceived theories may have led to incorrect observations or false deductions. The truth probably is, that any morbid agent capable of acting as a blood-poison, may give rise to the phenomena constituting puerperal toxæmia, in one whose peculiar condition, or, so to speak, present temporary idiosyncrasy, disposes her to take on that kind of diseased action.

The poison of typhus and typhoid fevers have also been named amongst the causes capable of producing the disease of which we are now speaking. If so, it must be owing to the peculiar susceptibility of the patient. Within the last eighteen months I attended a well marked and severe case of typhoid fever in a man whose wife, when he was at the worst stage of

his sickness, gave birth to a child in the same room in which he lay, and remained there during her confinement. The room was by no means well ventilated, and I feared for the result. She was, however, in an unusually short time out of bed, and engaged again in her attentions to her husband. Her convalescence was perfect, and so far as I know, without a single untoward symptom. Some weeks afterwards she exhibited, in a very marked degree, the usual precursory symptoms of typhoid fever, and I felt almost certain she would go down with that disease. I gave her immediately *Baptisia tinc.*, as a prophylactic, and to my surprise, in the course of a very few days she was entirely well. In this case we may believe that the impression was made upon her system by the poison, either during the puerperal state or before her confinement, for when she left her bed her husband was already convalescent.

The precise nature of the change wrought in the circulating fluid in puerperal toxæmia, through the agency of the blood poison, has not yet, so far as I know, been precisely determined. "In many respects," says Dr. Meadows, "it resembles that found in severe cases of typhoid fever. There is a decrease in the number of red blood cells, and an increase in the white cells, the fibrine is also increased, at least at first, but the solids generally are diminished. The extractive matter is increased, as is also the amount of lactic acid and fat. Moreover, there are also traces of bile-pigment, and Mr. Moore says that he discovered a 'black precipitate' in the blood of a person who had died of this disease, and that there was 'a peculiarly offensive odor arising from it.'"

The foregoing is probably but an imperfect account of the change which takes place in the blood, under the influence of the poison, rendering it not only unfit for the support of life, but causing it to produce destruction of tissue, or at least to suffer it to take place, almost in any part of the organism to which it circulates, and even in some instances to extinguish the vital spark before any appreciable organic lesion has supervened.

Nor can we suppose that it is merely the *quantity* of poison absorbed by the blood that, by its admixture, renders that fluid unfit to perform its normal functions. The amount primarily

absorbed is often no doubt exceedingly small. But in these cases "a little leaven leaveneth the whole lump." The precise manner in which this is effected has not as yet been demonstrated to the satisfaction of all. Some have supposed the process to be similar to, if not identical with fermentation. Hence they have been encouraged to use as antidotes to blood-poisoning, those agents which are known to prevent or arrest that process. For instance, sulphurous acid prevents fermentation, at least for a considerable time, in freshly prepared cider. Hence the sulphites have been used to prevent or arrest the ravages of blood poison. But whatever hopes artificial experiments may have held out, these have been disappointed so far as I know, when these agents have been employed in clinical cases.

It is a well established fact in chemistry that certain substances, by their mere presence, disturb the stability of compounds, and cause their elements to enter into new combinations, while these substances themselves undergo no change. "When a mixture of oxygen and hydrogen is exposed to the action of spongy platinum, the gases combine to form water; when alcohol is dropped on platinum black, under exposure to air, the alcohol is oxydated and converted into acetic acid." In these cases the platinum itself undergoes no change, but determines changes in the condition of the substances with which it is in contact. This peculiar action or modification of force, as yet unexplained, has been called Catalysis, from the Greek words, *κατα* downwards, and *λυω* I loosen. As yet we employ this term as we do *x* or *y* in algebra, to denote an unknown quantity. But whatever may be the nature of this action, it seems to me probable that that of the poison upon the blood may be similar to, if not identical with it; that through its catalytic power, it may cause such changes in the constitution of the blood that it remains no longer the vital fluid, conveying life and health and nutriment to every part, but becomes a lethal agent, setting up disease even in the very channels through which it circulates, and producing disorganizations and death in all the parts to which it is conveyed, and which, in its healthy state, it had built up and supported.

If this view be correct, we think it furnishes a satisfactory explanation of the astounding fact that toxæmic puerperal disease may originate from contact of the hands of the physician with the genital organs of the patient, even when the former are supposed to have been thoroughly cleansed. A single atom of septic matter may so act upon the secretions as to convert them into poison to be taken up by the absorbents, and ultimately corrupt the whole mass of blood. Strange as this may seem, it is scarcely more so than that a single spark carelessly dropped in the dried grass of the prairie, should kindle a fire capable of spreading over and devastating vast regions of country.

Without regard to the source whence the toxæmic poison may be derived, the resulting disease differs greatly in different subjects, in its symptoms, course and pathological lesions. In one case, the uterus will appear to have been almost exclusively the seat of diseased action; in others, and more frequently it will be found to have invaded other organs, as the peritoneum, Fallopian tubes, broad ligaments and ovaries. Distant organs, as the lungs and liver, may be and not unfrequently are involved in the morbid process. All this goes to demonstrate the all-pervading nature of the poison, whose deleterious action may be traced wherever the contaminated fluid circulates. The pathological lesions differ not only in their locality, but also in their kind. In one case may be found only the vestiges apparently of ordinary inflammation, while in another will be detected purulent deposits. From some difference in the symptoms of the disease in different cases during its course, and in pathological lesions detected after death, some writers have supposed several distinct toxæmic puerperal diseases to exist, to which the terms septicæmia, pyæmia and puerperal fever have been respectively applied. In the present state of our knowledge, however, it seems to me probable that these varieties are mainly owing to differences of idiosyncrasy, for the time being, in the patient, or other inappreciable circumstances, which modify the result. The opposite opinion has not, as yet at least, been demonstrated with anything like satisfactory clearness, as it is yet as far as ever from meeting with

general acceptance. We have, therefore, as announced at the commencement of this chapter, preferred to treat of this Protean disease under a generic term, including all the varieties, rather than as several distinct affections. This is the more allowable, because in Homœopathic practice we select the remedy according to the symptoms which present themselves, and not according to any arbitrary nosological classification or name, nor yet according to any supposed local pathological lesions which may exist, but which generally cannot be demonstrated till remedial measures are no longer of any avail.

As the sources of toxæmic disease are so varied, and the pathological lesions discovered after death so different, it is reasonable to suppose that the symptoms which announce its approach and characterize its course will be equally diverse. It will be well, therefore, before we proceed to speak of treatment, to give such a general view of these, as will at least enable the practitioner to anticipate the coming storm, or when it has actually arrived, to appreciate its extent, violence and probable results.

Of the various lesions found after death, the following proportions are given by Dr. Simpson: "Of 500 fatal cases of puerperal fever, recent inflammatory changes were noted in the interior of the uterus in 372 cases; in the veins of the uterus, 349; in the peritoneum, 321; in the lungs and pleura, 202; in the lymphatics, 129; in the ovaries, 78; in the cellular tissues and muscles, 46; in veins other than uterine, 40; in the brain and its membranes, 23; in the spleen, 21; in the vagina and pudenda, 19; in the bones and joints, 18; in the kidneys, 17; in the stomach and bowels, 13; in the pericardium, 12; in the mamma, 7; in the Fallopian tubes, 5; in the bladder, 4; in the parotid gland and heart substance, 3 each; in the endocardium, 2; and in the iris, tonsils, larynx and trachea, 1 each."

In cases in which the peritoneum is first or mainly invaded in the onset of the disease, the patient complains of unusual soreness in the lower abdominal region, and tenderness under pressure. This is usually accompanied by pain more or less intense, and of a continuous character. This latter circum-

stance will serve to distinguish from the after pains, which are intermittent. Those of "false peritonitis" are perhaps generally still more acute, and are ameliorated by occupying the patient's attention. These pains go on, however, increasing in severity, and are greatly aggravated by motion and by tension of the abdominal muscles. To avoid the latter the patient assumes the dorsal position, with the limbs drawn up. There is said to be a peculiar pain about the umbilicus, with a sensation as if it were drawn inwards. General constitutional disturbance soon follows; there are distinct rigors, greatly increased pulse, varying from 120 to 160 beats per minute, small and wiry. The skin becomes hot and dry, the breathing short, the abdominal muscles taking but little part in the process of respiration. The tongue becomes dry and coated, red at the tip, but brown further back. The abdomen is often tympanitic, and as the disease advances, swollen from effusion of fluid within the peritoneal sac. There are nausea and vomiting of mucus or bile, and sometimes of a dark fluid resembling coffee grounds, and even of fecal matter. The lochia may be unaffected, diminished, or even increased. The bowels are sometimes constipated, or there may be even profuse diarrhœa. The urine is thick, scanty, and high colored.

In fatal cases, low muttering delirium sometimes sets in, the expression of the features is anxious, the pulse becomes still more frequent and sometimes scarcely perceptible, till death, from exhaustion, closes the scene.

When the uterus is first involved, that organ is found to be enlarged and extremely tender under pressure. The symptoms are said usually to set in shortly after delivery, but we believe we remember one case wherein they did not at least become strongly pronounced till several days afterwards. There are severe rigors, accompanied by intense headache, general constitutional disturbance of a highly inflammatory character. Lochia usually suppressed. The inflammatory action often extends to the peritoneum, and the symptoms become modified accordingly.

When the uterine appendages are primarily involved, the pain and tenderness will be more circumscribed, and its seat will indicate the particular organ invaded.

When the veins of the uterus are inflamed, constituting what is termed uterine phlebitis, the onset is sudden and usually occurs a few hours after delivery. Here, again, there are rigors, followed by headache, suppression of the lochia and milk, fever, thirst, dry brown tongue, vomiting, etc.

The foregoing description will furnish a general outline of the disease. Different cases will be found to vary considerably in their symptoms, and different epidemics so much so, as almost to seem to be distinct diseases. This variation may depend upon modifications of the morbid agent acting as a blood poison, or upon some distinctive peculiarity inherent in different patients. An epidemic recently occurred in a Philadelphia hospital, in which a remarkable indifference on the part of the patients as to their condition and prospects characterized the disease.

But whatever shades of difference we may observe, there will still be manifest a general family resemblance that will enable us to decide as to the real nature of the case before us. We must not forget, however, that the protean form of the disease itself, admonishes us of the necessity of individualizing each particular case, as it is presented to us; that we must not expect to find any specific of universal applicability, nor even certainly suited to any considerable number of consecutive cases. Still, however, in any given epidemic, a remedy which we find efficacious in the outset of the disease, is likely to prove *generally* useful throughout its course.

Before speaking of the details of treatment which is too often unavailing in this terrible disease, we will endeavor to point out such measures as are generally successful in its prevention. Prophylaxis, where practicable, is always better than cure, and especially so in case of the malady which now engages our attention, which too often has progressed so far, or assumed such a degree of virulence before we are called in, as to baffle all our efforts.

We have already intimated that liability to this disease probably consists in depressed vitality. If this view be correct, then an important prophylactic measure will be to see after our patient before her confinement, and adopt such measures, if ne-

cessary, as will bring her up to that period in the best possible state of health. She should be in a condition which we term *vigorous*, all the vital functions actively performed, and even the mind in the best possible tone, active and cheerful. This object will be more or less attainable in different cases, and alas! in some not attainable at all. I need not attempt to enumerate the various means adapted to the object just stated. They will be suggested to the intelligent physician by the various circumstances of his patients, and valuable hints, I trust, be found in this and other works upon midwifery.

Before confinement, the physician should at least assist and advise in the selection of the lying-in room, so that as far as possible it may be well adapted to ventilation, proper and uniform temperature, etc. As we have elsewhere advised, it will be well, as a general practice, where tedious labor is anticipated from rigidity of the soft structures, to require the patient to take *Actea racemosa* or *Macroton*, for some days before labor, or such other remedies as he may think indicated, for the purpose of relaxation.

When labor comes on it should be conducted upon principles already laid down, so as to avoid, as far as possible, all unnecessary extreme suffering, abrasions, lacerations, contusions and mechanical injuries of every kind. Extreme exhaustion should by all means be avoided by timely resort to such means of assistance as the principles of our art require. After delivery, firm and persistent contraction of the womb should be secured, so as to expel blood-clots, or leave no room for their accumulation. I have thought *Ergot*, given in small doses in the course of labor, promoted this object. Dr. Goodell advises placing the patient frequently over the chamber-vessel, after delivery, as an efficient means for the expulsion of clots, to which I have elsewhere adverted.

When the patient is properly put to bed after delivery, as before advised, a few drops of the tincture of *Arnica*, diffused in a tumbler of water, should be administered in teaspoonful doses, once in two hours, and if contusions are manifest externally, a stronger preparation should be applied. Dr. Zwingenberg, translated by Dr. Lilienthal, in the *Hahnemannian Monthly*, for

July, 1875, asserts that it is his uniform practice to prescribe Arnica internally and externally, to women immediately after delivery, and since he has adopted this mode of treatment, says he has met with no cases of puerperal fever. The translator avers that this has also been his experience, and I would add, it has been mine. The Arnica probably tends to this result by accelerating the healing of wounded structures before septic matter is formed, and thus presenting a barrier to its absorption when it is produced, and probably too, as a powerful homœopathic antiseptic.

After what we have already said, it would seem hardly necessary to warn the practitioner to avoid communicating the disease through any careless neglect of precautions on his part. If he have been so unfortunate as to have had a case of the disease, especially if his duties have required him to bring his hands in contact with the person, and more particularly with the discharges of the patient, he had better, if possible, for the time being turn over his obstetric practice to another. The same precaution would be proper if he have had recently a bad case of erysipelas. But if this cannot be done, the utmost care should be taken to disinfect his hands, his person and his clothing, or rather to entirely change the latter. Dr. Wynn Williams speaks very highly of iodine as a disinfecting agent, in reference to septicæmia—he uses it for cleansing the hands with great confidence—for disinfecting the clothing—for washing out the genital organs, etc. He affirms he has never had a case of puerperal fever since adopting its use, which he has extended over a space of twenty years. Possibly bromine would be equally or more efficacious.

Toxæmic puerperal disease frequently occurs, especially in large cities, in epidemic form. Of the nature of the epidemic influence we have no certain knowledge. It is truly “the pestilence that walketh in darkness.” Of the part it plays in the production of the disease, we are equally ignorant. Possibly, after all, it may act only as a predisposing cause, by reducing the vital force below the standard necessary successfully to resist the encroachment of the blood-poison; the latter, derived from some of the ordinary sources, serving, under these favor-

ing circumstances, as the proximate or exciting cause of the disease. If this be so, although direct prophylactic measures may be unavailing against the action of the epidemic influence itself, those we have already proposed may still, to some extent, prevent its ultimate effects.

But a most important question here presents itself—can we by the *specific action* of a remedy administered, forestall that of the blood-poison, and thereby prevent this terrible disease from becoming developed? Have we or have we not, medicinal antidotes to the morbid agent which in this as in other zymotic diseases, so often works destruction in despite of all our remedial measures? It has long seemed to me that a vast field of research, in reference to this class of diseases, lies before us, holding out the most tempting rewards to the successful explorer.

It is plain to every one that when the blood becomes so contaminated, so changed in its constitution and character as no longer to be adequate to the support of life, death is inevitable. To forestall and prevent this consummation should therefore be the great object of the physician, if he would save life. So far as we know, however, we cannot arrest this lethal process by throwing into the circulation an agent which is capable of seizing and destroying germs of blood poison, or of causing the elimination of the altered blood corpuscles, while it leaves behind the still unchanged portion to perform its function in sustaining life. Such power of selection in any medicinal agent is not to be expected. If we would therefore accomplish the object above stated, we must look for something that will act upon an entirely different principle.

Far-sighted men seem to discern a dawning light in this direction. At a meeting of the London Obstetrical Society, held April 7th, 1875, Dr. Richardson, in concluding his remarks, holds the following noble and suggestive language: “My impression is,” says he, “that in the course of time we shall arrive at the discovery of certain agents which will immediately stop the action of septicæmous poison by their direct physical effect upon the blood, and their influence in holding oxygen in combination with the blood. I have recently referred in

another society to the effect of quinine in this respect, but that is a bungling crude method of dealing with an agent that will act in such proportions as the ten thousandth or the hundred thousandth part of a grain, so as to produce disturbance within the organism. So, dealing with this matter of antiseptics, I should say that if antiseptics, as they are called, that is bodies which prevent putrefaction, are advanced as a means of curing these particular diseases arising from septicæmous poisons, their action is not because they are antiseptics (because other agents which are not antiseptics possess a similar property), but for the simple reason that they act upon a given principle, and many of them act altogether in accord physically, and I might almost add chemically in neutralizing the specific action of these poisonous agents; I mean antiseptics do not act by destroying germs or organic forms, but they act definitely by interfering with the poisonous action of the septicæmous material which produces the fatal disease. I predict that in ten years hence, in this society, we shall see a means of preventing these diseases from septicæmous poisonings as clearly as we now see the means of producing them by the introduction of these poisons in the form of inoculated matter in small-pox by vaccination."

Looking back, we find in the *Medical Examiner* for November, 1848, a reference to quinine as a prophylactic of puerperal fever. Several experiments with that drug are given, from which it would seem that the opinion advanced by the writer is not at least altogether unfounded. Dr. Goodell, in detailing his treatment of lying-in patients, which he claims to have been unusually successful, and remarkable for its exemption from childbed fever, when that disease was prevailing around him, speaks prominently of using quinine as a prophylactic, but explains its efficacy upon a principle different from that which I have in view and wish to elucidate.

Recent observations made upon the action of quinine, would lead us, I think, to the conclusion that it produces changes in the constitution of the blood. The disease resulting from the protracted use of this drug, usually called *cinchonism*, seems to be in reality a blood disease, and has, as an essential element,

an altered condition of that fluid. This effect, too, appears to be produced independent of any change which the quinine itself undergoes; for the latter seems to be eliminated by the emunctories, unchanged and in about the same quantity that had been taken. Now, if these statements be correct, it would appear that whatever change the quinine may effect upon the blood, is effected not by adding any portion or element of itself to that fluid, nor by abstracting any principle by way of combination with itself from it, but simply by catalysis or action of presence, through which force its constitution is altered, its elements more or less extensively entering into new arrangements.

Now, if septicæmous poisons act upon the blood by catalysis, as we have attempted to show is probably their mode of action, then there may be, and probably is, a similarity between the latter and that of quinine, and consequently the one is antidotal of and Homœopathic to the other.

If we be thus far correct, we would go still further, and say that according to the principle just stated, the whole class of remedies which act by catalysis upon the blood lie before us from which we may hopefully select for the prevention and even cure of toxæmic puerperal disease, as well as *zymotic diseases generally*. Similarity of catalytic action between the remedy and the morbid agent is equivalent to *antagonism*; the one suspends or sets aside the action of the other. Probably, too, the *greater* the similarity in the particular mode of the catalytic action of the remedy and the morbid agent, the *more certainly* effectual will the remedy be. Further, too, it may possibly be found that high attenuations of the remedy, if well selected, will most certainly arrest and hold in check the changes in the blood set up by the lethal agent, which acts often in a highly attenuated form. Of this, however, I do not speak from any experience, but simply the analogy of the case.

The power of the catalytic force of one agent to arrest or suspend that of another, is recognized by Prof. Dalton in his work on Human Physiology. In answering the question "How it is that the gastric juice which digests so readily all albuminous substances should not destroy the walls of the stomach itself,

which are composed of similar material," he gives the following reply. "The true explanation, however, we believe, lies in this — that the process of digestion is not a simple solution, but a catalytic transformation of the elementary substances, produced by contact with the pepsine of the gastric juice. We know that all the organic substances in the living tissues are constantly undergoing, in the process of nutrition, a series of catalytic changes, which are characteristic of the vital operations, and which are determined by the organized materials with which they are in contact, and by all the other conditions present in the living organism. These changes therefore of nutrition, of secretion, etc., necessarily exclude for the time all other catalyses, and take the precedence of them. In the same way, any dead organic matter exposed to warmth, air and moisture, putrefies, but if immersed in gastric juice, at the same temperature, the putrefactive changes are stopped or altogether prevented, because the catalytic actions, excited by the gastric juice, take precedence of those which constitute putrefaction. For a similar reason, the organic ingredients of the gastric juice, which acts readily on dead animal matter, has no effect on the living tissues of the stomach, because they are already subject to other catalytic influences, which exclude those of digestion as well as those of putrefaction."

I fondly hope that further researches upon the action of remedies by catalysis upon the blood, will enable us to forestall and prevent the developement of the dreaded disease which now engages our attention. Every woman in child-bed we may regard as possibly liable to an attack, and especially so if cases have recently occurred in the same vicinity. We have thus, so to speak, the "probabilities" signalled to us in advance, that we may look out for, and provide against the coming storm.

Nor is it only as prophylactic agents I anticipate much from the class of remedies known as antiseptics, which will probably generally be found to act by catalysis upon the blood. They will, most likely, constitute our best curative agents, when the disease is developed, by arresting the process which rapidly tends to render the blood unfit for the support of life. Short of this point and before irreparable lesions have taken place,

they will doubtless often save the patient—beyond it, no remedial measures of course will avail.

But while it is our first duty to employ all suitable means to prevent the accession of toxæmic puerperal disease, indeed all puerperal disease, it is no less incumbent upon us closely to watch the patient, from day to day, so that should an attack unfortunately occur, we may have an opportunity of treating it in its earliest stage. To this end we should not only visit the patient as often as may be necessary, but strictly enjoin upon her to inform us *immediately* when any symptoms arise different from those of ordinary convalescence.

Lest we should seem to require the practitioner to enter into this fearful contest in armor to which he is not accustomed, before closing we will endeavor to give him as well, the treatment which has at least the sanction of some authority—how generally successful we are unable to say.

When the attack sets in with highly inflammatory symptoms, such as high fever following a severe chill, full bounding pulse, etc., Aconite should be given in repeated doses, and of sufficient strength to allay the fever and reduce the pulse. A few drops of the strong tincture in a tumbler of water, a teaspoonful every hour, or for awhile even more frequently, till some improvement in these symptoms takes place, or another remedy seems demanded. Some advise the high attenuations of Aconite, a dose every half hour or fifteen minutes, till improvement, then suspend its use. In some instances *Veratrum viride* may be preferable; the symptoms, of course, must determine the choice.

+ If the disease be ushered in by a severe chill, with disposition to its periodical recurrence, I would advise Sulphate of quinine, 1st dec., 1 gr., to be repeated, at least for some time, every hour, or even at shorter intervals. When there is severe congestive pain in the head, especially if accompanied by a violent bearing down sensation in the uterine region, *Belladonna* should be given. If there be evidence of rapid change taking place in the blood, from the catalytic force of the blood poison, *Arsen. a.*, 3d dec. should be given and persevered in. This condition may be recognized by the great tendency to prostra-

tion, fetor of the breath, sordes upon the teeth, disposition to passive hæmorrhage, etc. When there is extreme prostration, muttering delirium, grasping at flocks, involuntary stools, etc., Chin. ars., 1st cent., is recommended by Dr. Bæhr. In this condition *Crotalus* may also be thought of—also *Muriatic ac.* *Rhus tox.* may be useful where there is a disposition to epistaxis, pains characteristic of the drug, and a low typhoid condition. Sometimes it may be well to compare the symptoms of *Ergot* with those of the case before us. When we are called to see the case early, before the action of the blood poison has gained much headway, I would have considerable confidence in *Baptisia*, which might, if thought best, be alternated with some other remedy, which we should think more *specifically* indicated. Indeed I would strongly advise *Baptisia* to be given from the beginning, in doses equivalent to one drop of the mother tincture, at intervals, such as the urgency of the case would seem to demand. *Baptisia* is more specially indicated when the uterine discharges are fœtid. Where there is considerable tympanitis, eructations, fetid diarrhœa, diminished secretion of urine, tendency to passive hæmorrhage, especially from the bowels, *Terebinthina* will often be found an excellent remedy. The “spirits” of turpentine may be given upon sugar or in emulsion, in doses equivalent to one, two or three drop doses, at first every hour or two hours, afterward lengthening intervals according to the usual conditions prescribed. The same remedy may at the same time be externally applied to the abdominal region by means of stupes.

It has been stated in the *Scientific American*, that Drs. Bergman and Schmiedeberg have claimed that they have succeeded in isolating the poison generated by the putrefactive process of animal matter, in the form of what they denominate the sulphate of sepsin. If this be so, this article will probably be found of great value in treating the more malignant forms of puerperal toxæmic disease.

So hopeful am I of the success of those remedies that act directly upon the blood, in the prevention and cure of this dreadful disease, that I would strongly recommend the persevering use of not only those already named, but of others of the

same class; not indeed given indiscriminately, but carefully selected as may be, with our present imperfect knowledge of their true pathogenetic effects. Nor would I administer them exclusively by the mouth; but when there was reason to believe that the absorbent powers of the alimentary canal were impaired, I would give them by inhalation, and even by subcutaneous injection.

So general is the outlook of thoughtful men in the direction I have above indicated, for a more reliable means of treating puerperal and zymotic diseases generally, that I cannot think their hopes will prove altogether fallacious. No one, however, has, as yet, so far as I have known, fully comprehended the great principle—the *homœopathic* principle involved; and if that which we have above stated be the correct one, we are not as yet in possession of the exact kind of pathogenetic and pathological knowledge necessary to apply it always with the greatest possible certainty and success. But let us, by means of the microscope and chemical analysis, ascertain the precise nature of the changes wrought upon the blood by any given disease, and also of those produced by our remedies, and if this can be done, we have then, in military phrase, the key to the whole position. We do not, of course, mean to say that other symptoms, both subjective and objective may not be called in to our aid to the same end.

PUERPERAL CONVULSIONS.

This term should, in strict propriety, be used to denote such forms of convulsions only, in the production of which the puerperal state is an essential factor. Under it, however, are generally included by writers upon obstetrics, all convulsions which befall the parturient woman, shortly before, during, or immediately after labor, however these may vary in their symptoms or differ as to the causes from which they arise. Using the term as a generic one, they distinguish the different forms by specific names. Hence we have Hysterical Puerperal Convulsions, Apoplectic Puerperal Convulsions, and Epileptic Puerperal Convulsions, meaning by the last Eclampsia or Puerperal Convulsions, properly so called.

The cause of this disease has been a subject of laborious investigation, but notwithstanding the labor expended in the research, no opinion has as yet been advanced acceptable to all. The case is still "sub judice," and likely for some time at least so to remain.

It would seem, however, that one essential element in the production of eclampsia, or true puerperal convulsions, is that peculiar state of the nervous system of the woman, sometimes at least, induced by utero-gestation. Such condition does not, however, in all cases follow pregnancy, else when the same proximate causes come into play, all puerperal women would be attacked with eclampsia, which we know is not so. For instance, one will be thrown into violent convulsions when the head strongly presses upon, or is in the act of passing the cervix uteri, while another during that process experiences no particular inconvenience. Nor does this difference depend wholly upon an original or radical difference of constitution or organization; for the same woman may suffer from convulsions during one labor, while in another, apparently in the same circumstances, she will be exempt.

It seems probable, however, that women of a naturally irritable nervous system, are more likely to acquire during pregnancy this susceptibility to eclampsia than those of an opposite organization.

When this peculiar irritability exists, any cause producing a strong impression upon the nervous system, either central or peripheral, may give rise to convulsions. Thus, perhaps, over-distension of the uterus by the presence of twins, or an abnormal amount of liquor amnii, pressure of the fœtal head upon the os uteri, over-distension of the bladder with urine, or of the rectum with fæces, congestion of the brain from the blood being forced upon it by the efforts of labor, or its return interfered with from any cause whatever. Even strong mental emotions may cause a sudden invasion of convulsions.

Much has of late been said about urea retained in the blood through disordered function of the kidneys, as a cause of puerperal convulsions. This state of things has been inferred from the presence of albumen in the urine, for when this is detected,

it is said that upon analysis that fluid is found to contain less than the normal quantity of urea, while at the same time the blood contains more. Associated with an albuminous urine, will often coexist œdema of the feet, lower limbs, arms and face of the patient. These symptoms were supposed to foreshadow an attack of eclampsia, upon the occurrence of labor. Although convulsions, according to the experience of obstetricians not unfrequently occur when albuminous urine has been previously detected, and there has been œdematous swelling of the feet, face etc., of the patient, yet this does by no means always happen. I remember the case of a woman who engaged me to attend her in confinement just one day before labor set in, whose feet were so swollen as to bulge over the tops of her shoes, which she then wore much larger than her usual size, while her face and arms were equally œdematous. She had a tedious labor, and was ultimately delivered with the forceps, the head being taken at the upper strait, and yet no convulsions supervened. I had not an opportunity to examine the urine, and cannot therefore say whether it contained albumen or not, but it is most likely it did. It should be remarked, however, that in this case, being apprehensive of an attack of eclampsia, and noticing at one time during the course of the labor some twitching of the muscles of the face, which I thought rather ominous, I gave her a few doses of the tincture of Gelsemium, and soon these convulsive movements ceased, and shortly were, for the time, forgotten. Another case, however, perhaps still more to the point, was that of a woman who sent me a message that she desired to see me, without stating her object. Living at some distance, and not supposing the matter of much importance, I did not see her until some time afterwards. She then told me she had been very much swollen in her limbs and face, but that the swelling had passed away spontaneously. I was called upon to attend her in labor, but could not reach her until the child was born. There had been no convulsions, nor so far as I could learn, even the remotest indication of their approach.

Convulsions of the severest character often occur when the urine has been for some time before labor daily examined, and not a trace of albumen detected, and when there had been no œdematous swelling of the limbs or face of the patient.

If, however, albumen be not present before the eclamptic attack, especially if this be severe or prolonged, it is apt to appear in the urine shortly afterwards. From these facts, it seems not unlikely that the two phenomena, viz., eclamptic convulsions, and the appearance of albumen in the urine, and an abnormal amount of urea in the blood are effects, the offspring of a common cause, rather than that they sustain to each other the relation of cause and effect. It has been thought that the same morbid agent which induces convulsions may also derange the functions of the kidneys, giving rise to the appearance of albumen in the urine, and at the same time partially arresting the elimination of urea from the blood.

Frankenhäuser, of Jena, has published a work referred to by Dr. Barker, entitled "On the Nerves of the Uterus," illustrated by plates, in which he claims to have demonstrated a direct connection between the nerves of the uterus and the renal ganglia. From this discovery he infers that the condition of the kidneys, often associated with convulsions, is merely sympathetic with the irritation of the uterus. "He believes that the sudden occurrence of the eclamptic attack, following all external sources of irritation (as pressure of the foetal head upon the cervix, digital examinations, etc.), and from emotional causes, goes to prove that the nervous system, and not the vascular system, is the starting point of puerperal convulsions, and that the changes observed in the kidneys of women dying from convulsions, are too trivial and transitory, to indicate a long continued congestion; and further, in confirmation of these views, are to be added the undeniable cases of convulsions when no albuminuria has existed." A similar idea was promulgated by Dr. Tyler Smith, namely, "that the albuminuria may depend upon sympathetic irritation of the kidneys by the gravid uterus, similar to the irritation of the salivary glands, the mammae, the thyroid, etc., and not upon mere pressure" (Dr. Barker's Puerperal Diseases).

Still it may be true that the abnormal amount of urea said to be contained in the blood, contemporaneously with the existence of albumen in the urine, may be a factor in the production of puerperal convulsions. Whatever irritates the brain, and

through it the spinal cord, may contribute to such result: for it is maintained that upon whatever point the irritation may primarily act, its action must be communicated to the spinal cord before convulsions can take place.

Although the puerperal condition must be regarded as an essential element in the production of eclampsia, there is nevertheless a vast difference in the liability of puerperal women to this fearful accident. A very large proportion of the cases occurring are those of primiparæ. In women in their first gestation we may suppose there exists a more exalted sensibility of the nervous system than in such as have borne several children. There are also sources of irritation which in future pregnancies are much less powerful. For instance, in the case of primiparæ the abdominal walls resist more strongly the distending force of the womb. The same perhaps may be said in regard to the walls of the uterus itself—that this organ accommodates itself in a less friendly way, to the necessities of its new condition, than it will do in future pregnancies. Statistics seem to show that young unmarried girls are peculiarly liable to puerperal convulsions. In their case, in addition to the causes just enumerated, the moral emotions come into play. A sense of shame, degradation, and sometimes the loss of all once held dear—a compulsory descent from respectability it may be, to prospective ruin, adds fearfully to their risks.

It is thought by some that women of minute stature are more liable to convulsions than those of larger size. If this be true, and we have met with no confirmation of it in our own experience, it is accounted for upon the same principles we have laid down in the case of first pregnancies. Some again have supposed that epileptic patients are more subject to eclamptic seizures than others. On the contrary, however, statistics seem to show that in such patients, pregnancy often arrests for the time epileptic paroxysms, which again recur and assume their accustomed regularity after delivery. It is probable, however, that women who from early life, through the influence of slight causes, are thrown into convulsions, not epileptic, but manifestly of a purely nervous character, will be more subject to puerperal convulsions than others, whose nervous systems are

naturally less impressible. It has, moreover, been said that women who have once suffered from this malady are likely to experience a recurrence of it in their subsequent labors. This may be so in regard to the class of patients we have last noticed, but, generally, it probably does not hold good. We know a lady now resident in the city of Baltimore, the mother of several children, whose first labor was ushered in by severe convulsions, which continued in less and less frequently recurring paroxysms for several days. Her second labor was attended by the same complication, but subsequent ones were normal.

Puerperal convulsions of the severest form are sometimes ushered in suddenly without any premonitory symptoms. Dr. Lillenthal records the case of a lady far advanced in pregnancy (*Hahnemannian Monthly*), who, very shortly before her seizure, walked to the door with some friends about leaving her house, and was suddenly attacked by what proved to be fatal eclampsia. Sometimes the attendant, while taking his ease, and unanxiously waiting upon the progress of what he regards as a natural labor, is suddenly called by the nurse to the bedside, to witness the unmistakable commencement of severe convulsions. In this, however, as in other affairs of life, very often

“Coming events cast their shadows before,”

and precursory symptoms manifest themselves, which should always put the accoucheur upon his guard. These are given in such faithful and minute detail by Dr. Barker, in his recently published Lectures on “Puerperal Diseases,” that I cannot do better than to transfer his description to these pages. “The first and most frequent of these symptoms is headache, sometimes dull and continuous, and in other cases throbbing and recurrent. It is occasionally intermittent for days or weeks, until a few hours before the attack, when it becomes constant. It is frequently attended with vertigo, on making any movement of the head.”

“The symptom next in frequency and still more significant of danger, is impairment of vision. This, like the headache, is frequently temporary at first, afterward becoming permanent.

In some the sight, which had previously been good, appears to be suddenly lost."

"In connection with either or both of the symptoms I have just described, I should mention œdema, particularly of the face, coexisting with œdema of the extremities. It occasionally happens that this symptom exists alone, and even this in so slight a degree as not to be observed, unless carefully sought for, when the two other symptoms are wholly absent. Under these circumstances, it becomes an imperative duty to carefully and frequently examine the urine and test it for albumen."

"Whether albumen be or be not found in the urine, or even when the other symptoms I have just described are absent, if a pregnant or parturient woman suddenly complains of sparks before her eyes, or dimness of sight, or ringing in her ears, or difficulty in articulation, or suddenly becomes nervous, irritable, and complains of a severe pain in the head, the danger from convulsions is imminent."

Although any of these symptoms appearing in a patient near the time of confinement, or indeed at any period in the course of utero-gestation, should put us upon our guard, we have known most of them to exist, either singly or in groups, and eventually to pass away spontaneously without the superposition of convulsions. Those detailed in the last paragraph of the extract we have made, may I think justly be regarded as by far the most threatening.

Puerperal convulsions may take place before, during, or after labor. We remember the case of an unmarried girl who had a fatal attack about her seventh month. She had endeavored to conceal her pregnancy, and did not give any account of the prodromic symptoms she might have experienced. The convulsions first manifested themselves early in the morning, and the mother spoke of her as having been up in the night and showing signs of strange bewilderment. She, I believe, never spoke from the commencement of the attack.

The description of the onset of the paroxysm is so graphically given by the author from whom I have just quoted, that I trust I shall be excused for making a further quotation from his work just named.

The patient "becomes pale, with a fixed expression of her countenance, and a general immobility of her whole system. This lasts but a moment, when the eyelids begin to twinkle, the eyeballs to turn in their sockets, under the upper lid, so that only the white of the eye is seen; the angles of the mouth are drawn, producing a horrid grinace, which Baron Dubois has aptly compared to the countenance of the satyrs of the fable. The angle of the mouth being drawn up on one side, the face turns to the same shoulder; then the muscles of the face begin rapidly to contract, and this contraction almost immediately extends to the muscles of the trunk and the extremities. The neck swells, the jugular veins stand out prominently, and the carotids beat violently. The fists are doubled, generally with the thumb of one or both hands compressed in the palm by the fingers. Sometimes one arm is raised as if in an attitude to ward off a blow. The muscles of the throat and larynx strongly contract and cause a momentary suspension of respiration; the face is intensely congested, and of a purple hue. This condition of tonic convulsion does not continue, ordinarily, more than twenty or thirty seconds, when it is followed by the clonic convulsive movements. Rapid, jerking movements of the muscles of the face, body and extremities now succeed the muscular rigidity. A short, noisy, broken inspiration, with stertorous expiration, is attended with the escape from the mouth of a white foam, sometimes bloody from lacerations of the tongue. The patient can neither feel, see nor hear. The circulation is soon influenced by the respiratory troubles. The spasmodic contraction of the diaphragm and the other thoracic muscles interrupt decarbonization and oxygenation; the pulse which was at first hard and strong, now becomes rapid and feeble, capillary circulation is arrested, which causes a purple hue, particularly noticeable on the hands. Toward the end of the paroxysm, all these symptoms progressively disappear. The spasmodic movements of the muscles become less frequent and less violent until they entirely cease, the respiration and circulation become regular, the superficial congestions disappear, and the surface recovers its natural color. This period of clonic convulsions lasts from two or three

minutes to twenty. The tonic convulsions are really much more dangerous to life, and when patients die in the convulsion, it is in this period, the death being probably due to asphyxia."

The Prognosis of eclampsia is always uncertain, at least in the severer forms of the malady. Although comparatively a rare occurrence, it is not only one of the most alarming, but also one of the most fatal that attend pregnancy or the puerperal state. It may terminate in complete recovery, the patient having no recollection of what has transpired, or it may give rise to other diseases, such as puerperal mania, paralysis of members, idiocy, loss of memory, amaurosis, etc., or it may terminate in death, either directly during tonic spasm, perhaps as above stated through asphyxia, or, as more frequently happens, during the soporose stage, induced through oppression of the brain, by congestion or effusion. Fatal hæmorrhage has been known to succeed convulsions, through paralysis of the womb preventing its firm contraction. A favorable termination may be expected when the paroxysms become more distant and less severe, when a good degree of consciousness is restored between them, when there seems to be but little cerebral oppression, or if this have existed, when it is manifestly subsiding. On the contrary, short and imperfect intervals between paroxysms of great severity, deep unconsciousness between the convulsions, stertorous breathing, and other indications pointing to great cerebral oppression, portend a fatal issue. The prognosis will be specially unfavorable, if the attack has happened before delivery, and there has been no amelioration as regards the frequency and severity of the paroxysms after that has been accomplished.

Such being the nature of this formidable malady, its successful treatment is manifestly a subject of great importance. We will, however, premise before going further, that here, as in many other cases with which the physician meets, prevention is, sometimes, easier than cure. When at all practicable, therefore, it should at least be attempted. If we succeed in preventing the occurrence of the malady, we of course avoid the uncertainties always attendant upon treatment when it has once taken place.

When our services are engaged beforehand for attendance upon a patient in confinement, we should always call upon her and ascertain exactly the state of her health. And although convulsions and albuminuria by no means seem to be inseparably connected, yet the existence of albumen in the urine is sometimes a symptom of that derangement of vital function which appears to be a factor in the production of eclampsia. It will be well, therefore, to test the urine of the patient, especially if there be swelling of the feet, arms and face, or, indeed, of either. This œdematous swelling is believed to be often associated with albuminous urine. The remedy upon which I have most relied in correcting this condition, especially if the swelling be prominent, is *Arsen. alb.*, say thrice daily. If the urine be very scanty, *Apis mel.* may be given, either in alternation with the Arsenic or alone. If the patient complain of pain and burning, after voiding her urine, *Equisetum hiemale* will probably be of service. Where the albumen is very abundant, perhaps *Merc. corr.* will be found useful. Phosphor. may be thought of, if other symptoms be present pointing to it. Where there may be anticipated difficulty from unyielding structures, and especially if there be choreic twitchings, I would by all means give the tincture of the *Actea rac.*, say six drops in water, thrice daily, for ten or fourteen days before expected confinement. When the patient complains of fullness and pain in the head, especially on stooping, *Bellad.* should be given—if the pain be greatly aggravated by motion, *Glonoine* should be thought of. If nervousness and wakefulness are troublesome, these should be treated as before directed (see chapter on Disorders of Pregnancy). In short, whatever derangement of health we may find in the patient, it should be carefully treated according to the symptoms. As far as possible every source of irritation, whether material or moral should be removed. Anxiety and despondency should be counteracted by presenting encouragement drawn from the proper sources, and the patient should be led to *feel* that whosoever sympathy she may lack, she has fully that of her attendant. To bring the patient up to the time of trial in good health and a cheerful state of mind, has a wonderfully prophylactic effect, not only as regards

the calamity under consideration, but others also. Even the "unfortunate" should share our sympathy. We should remember that while far from condoning their crime, we are called upon, not to sit in judgment upon their conduct, but to relieve their sufferings, and save their lives, that they may go their way and sin no more. We should call to mind the example of Him who was infinitely purer than the best of us, whose withering rebuke dispersed the bloodthirsty conscience-stricken crowd—"Let him that is without sin among you, cast the first stone at her."

But it will sometimes lie beyond our power to use prophylactic measures to avert convulsions. As we have already said, they will sometimes suddenly manifest themselves without premonition, and without suspicion, on our part or perhaps even that of the patient, of their approach. Or we may be called, or at least reach the bedside after they have fairly begun. All we can then do is to resort to remedial measures, such as our knowledge and skill may suggest.

In the first place, if we are present when the attack sets in, our duty is to secure the patient as far as possible from injuring herself during her spasms. Something should, if possible, be placed and kept between her teeth, in order to prevent her from biting her tongue. A piece of cork will perhaps answer best, if present—if not, a very solid roll of linen or muslin. She should be so restrained as to prevent her from bruising her limbs by violent movements, but not held so firmly as to entirely prevent mobility. We should, if possible, ascertain the focus of irritation which has given rise to the spasms. We should endeavor to discover whether the bowel may not be overloaded with fecal matter, or the bladder distended with urine. The former, if it exist, should be immediately relieved by injections of tepid water, and the latter by the introduction of the catheter, as soon at least as this can be done.

Most persons in their ordinary condition and health, experience little or no inconvenience from either of these causes, unless in extreme cases, or very long continued; but we must bear in mind the very greatly increased impressibility of the nervous system of the puerperal woman.

Should any other source of irritation be discovered, whether material or moral, it should at once, as far as possible, be obviated. Even the presence of persons in the chamber toward whom the patient may be supposed to entertain any feeling of antipathy, should not be permitted. Our motto here should be, emphatically, "*Tolle causam.*"

If labor have already set in, we should examine the condition of the os uteri, and if there be sufficient dilatation to justify the procedure, and especially if there be reason to believe that the convulsions are dependent upon irritation of the womb from the presence of the fœtus, we should deliver either by means of the forceps, or by turning, according as the one or the other of these resources may be most plainly indicated. If the head be already engaged in the upper strait, or have descended into the cavity of the pelvis—especially if the os be well dilated, the forceps will come into play, but on the contrary, if the head be high and the os imperfectly dilated, turning will be the proper resort. It may, perhaps, be stated generally, that when convulsions occur during labor, to empty the womb as speedily as can be done with safety, is one of the first indications to be fulfilled. Till this is done remedies are not likely to succeed, but nevertheless should be diligently used. It frequently happens, however, that the mouth of the womb is most rigidly contracted, and obstinately refuses to yield to the ordinary resources of nature, and too often also those of art. We must not, then, rudely lacerate this organ for the sake of effecting speedy delivery, but resort to such other measures for the present as may best serve to mitigate the spasms, and ultimately secure dilatation. If there seem to be symptoms indicating congestion, especially of the head, Bellad. may be given, provided the patient can be induced to swallow. Pellets or powders may be thrown far back into the mouth, if she continue too unconscious to take them in the usual manner. This remedy very often corresponds to the most prominent symptoms of eclampsia, and that it has "moreover a special affinity to the condition of a parturient female, is not only shown by our *Materia Medica*, in spite of the incoherent arrangement of its symptoms, but may likewise be learned from any recognized toxicological treatise."

Gelseminum is a remedy of great promise in the treatment of puerperal convulsions. Its pathogenesis can be best learnt in Hale's New Remedies, also in Burt's Characteristic Materia Medica. From the effects of this remedy I myself have witnessed, I know of none in which I would place greater confidence. I would give it in drop doses of the mother tincture, repeated according to urgency. Dr. Hempel speaks very favorably of Bromide of Potassium in large doses. I have had no experience with this drug; but would be disposed to try it should others, with which I am more familiar, disappoint me. Where there is rigidity of the os uteri, I would place considerable reliance upon *Actæa racemosa*; not only from its relaxing effects upon that organ, but on account of its curative powers over chorea, a spasmodic affection sometimes arising from irritation of the womb. *By all means try it where the os uteri is very rigid.* Hydrate of chloral is very highly spoken of by allopathic authors, and should not, on that account, be rejected.

But a great difficulty, in administering medicines satisfactorily by the mouth, arises from the spasmodic nature of the disease, and, in severe cases, from deep and long continued unconsciousness. Where this opposes an insuperable barrier, they may be given by enema, or, perhaps better, by subcutaneous injection.

In cases where the paroxysms are severe, return frequently, where we are anxiously desirous of emptying the womb, but the os is undilated and undilatable, and especially where other remedies, carefully selected, have been of little or no avail, Chloroform affords us an admirable resource. When properly managed, it not only controls reflex action and holds in abeyance the convulsive attacks, but it proves the very best agent for relaxing the os and thereby rendering delivery not only practicable, but safe. As it is administered by inhalation, its salutary effects are independent of the consciousness of the patient, so long as she still respires. The inhalation should be conducted carefully and in the manner I have elsewhere advised (see chapter XII); but, at the same time, with sufficient boldness, to produce the anæsthetic effects of the agent.

Its administration should be suspended when the paroxysm comes on, till this has subsided and the patient has taken in sufficient fresh air to relieve the asphyxia.

I am aware I subject myself, at least with some, who, perhaps, claim to cure all cases by other means, to the charge of departing from Homœopathic practice in this advice. In the first place I am not so certain that it is a departure from sound Homœopathy. I am strongly inclined to believe that Chloroform exercises a specific curative power over, at least, some forms of convulsions. Its action upon the nerves of sensation is certainly similar to that of the morbid agent, inasmuch as both produce anæsthesia. Chloroform is also said to have caused convulsions. I well remember a case which, I admit, is not wholly conclusive, as the conclusion is reached only through analogy; but which is certainly strongly suggestive. It happened in the very early days of the use of chloroform as an anæsthetic, as some then thought, and still think, as a *lethal* agent. A young male cat had been dropped upon my premises, I suppose, perhaps, because he was regarded as an incurable invalid. He was subject to what appeared to be very severe epileptic convulsions of frequent recurrence. His paroxysms were ushered in by the most piteous howling, and then violent clonic spasms, followed by tonic, which in a few seconds closed the fit. When his paroxysm ceased, he walked slowly away, and seemed to feel very badly. He had become much emaciated. It occurred to me I would kill him with Chloroform, which, from the high reputation of the drug in that direction, I thought would be an easy performance. I took the opportunity when he was in a severe paroxysm, and administered the chloroform upon a sponge and without stint. The convulsions soon ceased and the patient lay still, as if in death. He soon, however, showed by his movements that he was not dead. I repeated the process—and that again and again, until I became convinced that however well adapted to homicide, chloroform is not the best agent for felicide. I therefore dismissed the patient to die at his leisure. But, to my astonishment, I never saw the cat have another paroxysm of convulsions—I believe he had none, and he soon took on

flesh, and became apparently perfectly healthy, and remained so about my premises for several years.

The objection, too, that the amount of Chloroform required, and that if successfully used, is commonly given, is at variance with the ordinary course of Homœopathic practice, I consider of no weight. If it be even fully settled that some remedies, such as Arsenic., Silicea, Sulphur, etc., act best in high attenuations, it is certainly bad logic, in our present state of knowledge, to conclude that the same is true of all other medicinal agents. The utility of Chloroform, given as directed above, is, I think, fully established by the experience of others. Our Allopathic brethren claim to have reduced their mortality through its agency about fifty per cent. We are hardly justified, I think, in the conclusion that this difference is owing to the substitution of chloroform in the place of more homicidal measures.

The following case, treated but a few months since, I think of sufficient interest to justify me in the recital.

I was called upon to attend in labor a young lady in her first confinement, whom I had known before to be of exceedingly nervous temperament, and subject to spinal irritation. She lived at a distance of several miles, so that, although engaged some time before her labor, I did not see her, but requested particularly by letter that if any œdematous swelling of her person should occur, I might be informed of it. I was assured there was none.

When I first reached her bedside she complained of severe headache, and seemed to be very nervous. I gave her some remedy, I think Coffea. Shortly after I heard no more of pain in the head; but as labor advanced, and she began to suffer severely, she begged of me to give her chloroform. Her request was granted, and she passed very handsomely under the influence of the anæsthetic. The womb continued in very vigorous action, although she was wholly insensible to pain, and toward the close of labor its powerful contractions were almost continuous, as if under the influence of Ergot, although none had been given. The labor terminated rather sooner than I had expected, and the child, constitutionally a feeble one, was

still-born, either, I presume, from premature detachment of the placenta or compression of the cord. The patient waked up as usual and made no particular complaint. I saw her next day toward evening, and found she had been suffering through a considerable part of the day from intense pain in the head. I left Bell. with a strict injunction to let me know if anything more unfavorable should occur.

I was waked about two o'clock the following night by a messenger, who could only inform me that the patient was "much worse;" but could not tell in what particular way. I went with him a distance of about nine miles, and the night being rainy and exceedingly dark, a good deal of time was spent on the road. When I arrived I found the patient had been in frightful convulsions since about nine o'clock—it was now about four in the morning. The paroxysms recurred about every twenty minutes—the pulse, which had been the evening before full and *remarkably slow*, had now become very small and quick.

After some preliminary measures, I commenced administering chloroform in the intervals of the paroxysms, by inhalation, and as soon as I was able to effect it, threw up one drachm of the same in water as an enema. This was retained, however, but a short time. Simultaneously with these measures, I commenced giving by teaspoonful doses a solution of six to ten drops of *Veratrum viride* in a tumbler say two-thirds full of water, every fifteen or twenty minutes. In the intervals of her seizures, the patient, although entirely unconscious, swallowed any liquid put into her mouth with a spoon.

After commencing this treatment, the next recurrence was at an interval of one hour—then two hours—then three hours, which was the final one. I visited the patient next morning, and found her doing well, but utterly oblivious of all that had happened the day before; had at first forgotten about her late confinement, and had even expressed some uncertainty about her marriage. She, however, fully regained her faculties, which were very good, and made a satisfactory recovery. Upon my return from my last visit to this patient (Sunday), I was informed that two other similar cases had occurred during

the past week within a few miles, both primiparæ, both under allopathic treatment, and both had died. I found this report upon careful inquiry to be strictly correct.

Finally, we as a school have thrown away the lancet, and we hope, but for very exceptional cases, forever. Are there any imaginable circumstances in the treatment of puerperal convulsions that might still suggest the propriety of its employment? I confess I speak here with hesitancy, for having set out for the Promised Land, although its full enjoyment may yet be distant, I feel no inclination to return to the flesh-pots of Egypt.

Even our Allopathic brethren have to a great extent lost their confidence in bleeding in this disease, and have nearly discarded its use. Still there are cases reported of the convulsions *finally* ceasing immediately after venesection. If unmis-takeable evidence exist of strong congestion in the brain, when as yet we have reason to hope that rupture of the vessels has not taken place, nor effusion considerably advanced, when the pulse is full and strong, or on the other hand, as may be most likely, oppressed and feeble, and when death already threatens the patient unless relief be procured from some quarter—as yet unexplored—let us try the lancet.

FALSE OR SPURIOUS PERITONITIS.

This is the name given by authors to an affection of child-bed, which if it occur at all, usually takes place within a few days, mostly a few hours after delivery. It is characterised by an excessively severe pain originating in some spot in the abdominal region, but if it continue for some time, seems to spread over a larger space. It is important in several of its aspects, although not necessarily a dangerous affection. In the first place, it bears sufficient resemblance in its symptoms to incipient peritonitis to excite great alarm on the part of the patient and her friends, which is of itself an evil much to be dreaded. In the hands of the allopathic practitioner, a mistake of this kind might lead to fatal results; for should he resort to the lancet and freely abstract blood, the mischief in

some cases would be irreparable. With us, who ought to be guided in our practice by the symptoms, not by the name, it is true there is no such danger, but still it is proper we should apprehend the true nature of the case.

False peritonitis, as it is with no great propriety of language called, is not an inflammatory affection, but probably altogether neurotic. It is not improbable, however, that severe cases neglected or improperly treated, may sometimes induce or run into true peritonitis.

The older writers upon midwifery took no notice of the affection. According to Dr. Meadows, Dr. Gooch was the first to describe it and point out the suitable treatment. I remember to have met with several cases in my own practice before I met with any description of it in the authors to which I had access.

I quote the following from Dr. Meadows' "Manual of Midwifery." "It occurs," says he, "mostly in women of delicate and nervous habits, and is frequently met with in hysterical persons. The pain is often of the most excruciating character, and is greatly aggravated by any movement of the body. So distressing is the pain, that persons will sometimes become almost frenzied with it; they are quite incapable of bearing even the slightest touch with the hand or the weight of the bed-clothes on the body; but that which marks its strongly nervous or hysterical character, and serves at once to distinguish it from the truly inflammatory pain is, that if the patient's attention be distracted by conversation or other means from the seat of pain, pressure, even to a considerable extent, if gradually and cautiously applied, will be borne not only without complaint, but apparently without her knowledge; but no sooner is her attention again drawn to it, than the same exquisite sensitiveness again reveals itself, and she screams out lustily even at the approach of pressure. Again, if by soothing words and promises of cautious proceeding we induce her to let us apply the hand upon the abdomen so gently that it does not even rest its weight upon it, we shall find that we may now gradually increase the pressure until by degrees it becomes considerable, not only without her feeling any increase of pain, but with

complete relief, the pressure of the hand as it were appearing to benumb the pain. If we withdraw the hand in the same gradual manner, no pain will be induced, but if we remove it suddenly, a spasm of the muscles with intense pain is immediately excited." (Rigby.)

"With all this, there is often a great show of constitutional disturbance, though it is all of the same evanescent character; the tongue becomes dry, the pulse quick, small and jerking, the skin is hot, but mostly covered with perspiration, and the mental excitement is often very great."

The patient too will often tell us she has had a chill. This probably has been of a nervous character, like that which not unfrequently occurs shortly after delivery. According to the observation of authors who speak of this affection, it is most frequently encountered in the case of women of previously feeble health and nervous irritability. One of the worst cases I have met was that of a woman who before and since has suffered severe attacks of hay asthma.

As regards the treatment of this affection, I have always found Acetate of morphia to give very prompt relief. One grain in ten teaspoonfuls of water thoroughly dissolved, a teaspoonful every half hour till relief is experienced, then discontinue remedy. Patients generally reported relief after the second or third dose, without experiencing in any degree the narcotic effects of the drug. How much smaller doses might answer the same purpose, I am unable to say; I have succeeded with the above, and have been satisfied.

I have also used, at the suggestion of Dr. Ludlam, Atropia 3d dec. with excellent results. One or the other of these medicines has promptly relieved all the cases I have met, and I think will relieve generally, with few if any exceptions, if resorted to in time and under the requisite concomitant circumstances.

MASTITIS, OR INFLAMMATION OF THE MAMMARY GLANDS.

This affection often occurs to the nursing woman, and most frequently shortly after delivery. We therefore speak of it as

one of the diseases of the puerperal state. It may, however, take place at any time during lactation.

The immediate cause giving rise to inflammation of the breasts, is obstruction to the flow of milk along the lactiferous tubes, and consequently to its discharge by the nipples. Engorgement hence ensues, and if not soon relieved, inflammation speedily follows. This obstruction may arise from various causes—from neglect to draw the milk, through which the milk tubes become distended, and crowd and compress each other. Or it may owe its origin to undue congestion of the blood-vessels, with which the substance of the mammary glands is abundantly supplied. This congestion may arise from chills or exposure to cold, perhaps strong mental emotions, or any causes that disturb the equilibrium of healthy innervation. The breasts during lactation, especially in its earlier periods, are in a state of unwonted activity, both nervous and vascular, and therefore readily receive the impression of any morbid agent, upon whatever part of the organism its primary impact may fall.

There are commonly reckoned by authors three varieties of mastitis, viz., the sub-cutaneous, affecting the areolar tissue, beneath the skin; the glandular, seated in the substance of the gland itself, and the sub-glandular, in the cellular tissue beneath the gland. As inflammatory processes do not very scrupulously observe the limits prescribed by classification, these varieties not unfrequently overstep their assigned bounds, so that more than one of them may be encountered in the same breast, either at the same time or in close succession.

The first named variety, if alone, is in its course the shortest and least injurious to the functions of the organ, either for the time or subsequently. The second and third, unless well managed in the outset, are of long duration, and give rise to untold suffering, and often render the breast incapable of performing its functions after recovery.

The best treatment of this disease, as of many others to which the puerperal woman is liable, is the prophylactic. When inflammation of the mammary gland sets in, unless treated very early, it is extremely liable to go on to suppura-

tion. If it occur after the physician has ceased from his daily attentions to his patient, she is apt to be subjected to a trial of the many infallible cures known to the nurse or friends in charge. When he is recalled it is usually too late to prevent suppuration.

Enumerating prophylactic measures and going back to the remotest of them, we would advise, as we have elsewhere done, and which we need not fully repeat in this place, especially in women pregnant for the first time, to pay early attention to the condition of the nipples. This should be done for some time before confinement.

We have thought that the administration of Arnica at the close of labor, as is our uniform practice, has a tendency to prevent mastitis, especially the phlegmonous or sub-cutaneous variety of that disease. Its efficacy in the case of common boils, is, I believe, pretty generally conceded.

After delivery, a great object will be to keep the breasts as perfectly exhausted as possible. To this end, the child, if healthy, should be early accustomed to suck. It should not be unnecessarily fed before the secretion of milk, and especially upon panada and other articles, entirely unsuited to its digestive powers, which impair its health and of course diminish its appetite and disposition to take the breast freely. When the milk cannot, for any reason, be fully drawn by the child, recourse must be had, if necessary to prevent engorgement, to the gentlest and least irritating means accessible, and the best of these is the mouth of the nurse, and next to this the exhausted bottle. These measures need be carried so far only as to prevent excessive and painful accumulation of milk.

It has generally been advised, when a circumscribed hardness takes place in any part of the gland, which the women usually call "caking," that the nurse, standing behind the patient, if the latter be sitting up, having her hands lubricated with some soft oil, should gently rub the breast forward toward the nipple, very slightly increasing the pressure as the patient becomes accustomed to it. Of late, however, such interference is discountenanced by the "highest authorities." We are very apt to oscillate from one extreme to another, and very often pass

the truth lying midway between. When there is simple engorgement or congestion, and the inflammatory process, properly so called, has not yet set in, judiciously applied pressure in the form of gentle friction may, I think, sometimes be of service. Still it is perhaps better not to leave to the indiscretion of the nurse the employment of a measure which if injudiciously applied, may do much harm.

At a meeting of the Obstetrical Society of London, held on the 6th of January, 1875, a paper was read by Dr. W. Bathurst Woodman, "On the prevention of Mammary Abscesses by the Application of the Principle of Rest." An interesting discussion on the subject of the paper ensued, in which some of the most distinguished members of the society took part.

The author inferred from the rarity of mammary abscess in the case of cats, dogs and other animals deprived of or absented from their young, and which are subjected to no interference, that the disease in the human female is rather hastened than prevented by the usual measures employed for prevention. The author does not tell us how much these animals suffer before they escape, and how much that suffering might be diminished by judicious appliances. In the case of mares, which generally escape abscess, the "*nimia deligentia*" is only too often resorted to. It is highly probable the inferior animals are naturally less liable to abscess than the human female.

These eminent gentlemen pretty generally agreed that it was all important to secure perfect rest to the suffering organ, and to abstain from the usual interference such as frictions, external applications, etc. They recommend the use of the suspensory bandage to relieve dragging and weight. Some advised the application of the Belladonna plaster. Dr. Ashburton Thompson advised minim doses of Tincture of aconite every hour, by which he had succeeded in cutting short inflammations of the breast, which there was no doubt would have run on to suppuration—frequently, indeed, in three cases out of four. In cases of still-birth he had hitherto found abstention from fluids sufficient in every case to avoid every kind of mammary disturbance.

Dr. Braxton Hicks thought the principle of rest had been

gradually coming upon us for years, friction only being resorted to among the poor and ill-educated. Surgery at the present day was all tending to quietude, manipulations only led to suppuration, and often produced the extra amount of stimulation required to set it up.

Dr. Murray observed that the application of a Belladonna plaster was of great service, keeping the arm at the same time fastened to the side. In some instances a slight process of friction upwards was productive of good. The foregoing are, it is true, allopathic authorities; but I am not unmindful of the words of the great Roman poet, "*fas est ab hoste doceri.*"

That injudicious interference is injurious in the case of mastitis, and where is it not? is manifest from the fact that, so far as I can remember, I can think of no case where the procedures of ignorant women were freely resorted to, that did not end in suppuration, often very extensive, and not unfrequently involving both glands.

The patient throughout the puerperal period should carefully avoid all imprudent exposures to currents of air or a chilling atmosphere, or dampness. Owing to the cutaneous surface being usually moist with perspiration, she readily chills, and the injurious effect is often reflected upon the breasts. After leaving her bed these organs should be carefully guarded against cold, but, on the other hand, should not be kept too warm.

After the child commences to suck, every precaution should be taken to avoid sore nipples. If these become tender, she should procure a gum elastic nipple shield before abrasion takes place. The nipples should be carefully washed after each nursing of the child. If, notwithstanding all precautions, they become abraded, ulcerated or chapped, the suitable remedies, elsewhere laid down, should at once be had recourse to.

Mammary abscess is usually ushered in by a chill more or less severe. This is followed by fever and headache. The mammary gland or a portion of it becomes hard, and to the touch presents the sensation of a lump. Pain sets in and gradually increases until it deprives the patient of sleep, im-

pairs or destroys appetite, and, if unchecked, completely unfits her for every duty and all enjoyment.

When called in the stage of chilliness and fever, Aconite should be given at short intervals, say every half hour, until perspiration sets in, the patient keeping closely in bed. The weight of the breast should be relieved by adhesive straps or a properly adjusted suspensory bandage. Gentle but not excessive pressure may be applied, avoiding such a degree as to increase pain or suffering.

Bryonia is indicated by hardness and distension of the breasts, shooting pains, dry skin, thirst, etc.

Belladonna should be given when there is engorgement, redness of the skin covering the breast resembling erysipelas, headache, etc. We have seen few cases go on to suppuration where Bell. was perseveringly given. This remedy is thought by some to be better suited to threatening of mammary abscess at the time of weaning the child than shortly after labor. Extract of Belladonna, softened or diluted with glycerine, and spread upon the surface of the breast, will be found an excellent application in glandular mastitis. It may be applied by means of a cloth, having a hole cut in to fit the nipple.

Phytolacca decandra (poke weed) has been much praised by some as a remedy for mastitis. It has been used in domestic practice, and has been pretty generally thought to possess curative powers in this disease. Dr. Hale, in his "New Remedies," speaks highly of it. I have occasionally used it; but my experience with it has not been sufficiently extensive nor my results sufficiently positive to speak very decidedly in its favor. I would suppose it perhaps indicated where there is aching of the limbs and a general feeling of malaise.

Phosphorus is a remedy of great value in this complaint. Where the symptoms were not very acute in the outset, consisting of hardness and soreness of a portion of the gland, threatening a worse state of things if neglected, I have thought Phosphorus, perseveringly used, has, in my hands, been of great benefit. Sooner or later the hardness has generally passed away and the soreness subsided, the gland returning to its normal condition. I have generally applied a solution of a few

drops of the saturated alcoholic tincture to the breast externally, by means of flannel cloths, or lint saturated with the solution and covered with oiled silk, to preserve moisture, at the same time giving it internally.

Where hardness remains after the use of other remedies, or where suppuration is imminent, Mercurius will be found useful. In the last named condition, Hepar sulphuris may be of use.

Where mammary abscess has taken place, been badly managed and assumed a chronic form, there being often several fistulous openings, discharging pus or serous fluid, Silicea will often prove an excellent remedy. I have seen such cases so emaciated by long continued suffering as to present the appearance of one in the advanced stages of consumption, who in a few weeks, under the persistent use of Silicea, so changed their aspect as to be scarcely recognizable.

It has been disputed whether poultices should be applied to gathering breasts, at least before the breaking of the abscess. If I were to express an opinion, it would be this—avoid poultices until it is pretty certain that suppuration is inevitable—then apply them in a very simple form, until, at least, the bursting or opening of the abscess.

Again there is a difference of opinion as to whether we should open the abscess with the lancet, or in all cases leave it to open spontaneously. Truth is seldom found in extremes. Rules laid down, to be applied to all cases, are necessarily often misapplied. My practice has been to avoid plunging the lancet *deeply* into the gland, especially near the nipple. Many of these abscesses, if encouraged by the use of Mercurius, will, in due time, open themselves and thus save the pain and other evils of a cutting operation. But when the matter has approached near the surface, that nothing but the skin needs to be cut, where this latter does not seem to give way, and especially if discoloration over a considerable surface appears likely to take place, and if in addition to this the patient is suffering much pain, I do not hesitate to use the lancet and make a free opening for the exit of the pus. The incision, especially if near the nipple, should be made in a line as if radiating from

that point. In this way there is less risk of severing the milk ducts; always, however, if possible, avoid an incision within the limits of the areola. It is scarcely necessary to add, after what I have already said, that the opening should be made with a bistoury or abscess lancet, and not with the spring lancet, used in phlebotomy, as has often been barbarously done.

Some women have the greatest horror of this operation, partly from their consciousness of the excessive tenderness of the part, and, perhaps, principally from nervousness induced by loss of sleep and extreme protracted suffering. In such cases there can be no valid objection against the use of an anæsthetic, pushed to insensibility. If we decide upon this, perhaps ether had better be selected, as the effect of fear is extremely paralyzing to the action of the heart; this effect, added to that of chloroform, *might* produce disastrous consequences. Ether has, *at present*, at least a less formidable reputation, as a destroyer of life, than chloroform, and should it produce this unfortunate result, it would be more readily excused than its competitor.

Quite lately it has been asserted that an application of a solution of carbolic acid in glycerine, I think two parts of the former to one of the latter, will temporarily destroy the sensibility of the skin. The application should be made five minutes before incision is attempted.

When pus is formed in the cellular tissue beneath the gland, as evidenced by chills, extreme enlargement of the breast, indistinct fluctuation, etc., the puncture should be made at the most dependent point beneath the margin of the organ, at which the matter can be conveniently reached. In this variety of mammary abscess, when the pus is left to find its own exit, it not unfrequently discharges at several different points, forming as many fistulous openings into the substance beneath the gland. When matter accumulates and is long pent up in the sub-glandular cellular tissue, it compresses the gland and brings on disease of its substance, often resulting in abscess of that organ itself, and greatly complicating the case.

Before closing this chapter, we will transcribe what Mr. Lister has written upon the treatment of abscess, according to his antiseptic plan:—

“A solution of one part of crystallized carbolic acid in four parts of boiled linseed oil having been prepared, a piece of rag, from four to six inches square, is dipped into the oily mixture and laid upon the skin where the incision is to be made. The lower end of the rag being then raised, while the upper end is kept from slipping by an assistant, a common scalpel or bistoury, dipped in the oil, is plunged into the cavity of the abscess, and an opening, about three-quarters of an inch in length, is made, and the instant the knife is withdrawn the rag is dropped upon the skin as an antiseptic curtain, beneath which the pus flows out into a vessel placed to receive it. The cavity of the abscess is firmly pressed, so as to force out all existing pus as nearly as may be (the old fear of doing mischief by rough treatment of the pyogenic membrane being quite ill-founded); and if there be much oozing of blood, or if there be considerable thickness of parts between the abscess and the surface, a piece of lint, dipped in the antiseptic oil, is introduced into the incision, to check bleeding and prevent primary adhesion, which is, otherwise, very apt to occur. The introduction of the lint is effected as rapidly as may be, and under the protection of the antiseptic rag. Thus the evacuation of the original contents is accomplished with perfect security from the introduction of living germs. This, however, would be of no avail, unless an antiseptic dressing could be applied that would effectually prevent the decomposition of the stream of pus constantly flowing out beneath it. After numerous disappointments I have succeeded with the following, which may be relied upon as absolutely trustworthy. About six teaspoonfuls of the above mentioned solution of carbolic acid in linseed oil are mixed up with common whiting (carbonate of lime) to the consistence of firm paste, which is in fact glazier's putty, with the addition of a little carbolic acid. This is spread upon a piece of common tin-foil, about six inches square, so as to form a layer, about a quarter of an inch thick. The tin-foil, thus spread with putty, is placed upon the skin, so that the middle of it corresponds to the position of the incision, the antiseptic rag, used in opening the abscess, being removed the instant before. The tin-foil is then fixed securely by adhesive

plaster, the lowest edge being left free for the escape of the discharge into a folded towel placed over it and secured by a bandage. The dressing is changed, as a general rule, once in twenty-four hours; but if the abscess be a very large one, it is prudent to see the patient twelve hours after it has been opened, when, if the towel should be much stained with discharge, the dressing should be changed, to avoid subjecting its antiseptic virtues to too severe a test. But after the first twenty-four hours a single daily dressing is sufficient. The changing of the dressing must be methodically done as follows. A second similar piece of tin-foil having been spread with putty, a piece of rag is dipped in the oily solution and placed on the incision the moment the first tin is removed. This guards against the possibility of mischief occurring during the cleansing of the skin with a dry cloth and pressing out any discharge which may exist in the cavity. If a plug of lint was introduced when the abscess was opened, it is removed under cover of the antiseptic rag, which is taken off at the moment when the new tin is to be applied. The same process is continued daily until the sinus closes."

When a considerable cavity is formed in the breast and the pus is fully evacuated, very gentle, equable pressure, sustained by the dressing, will contribute very much to speedy and permanent repair.

It is of the utmost importance that an abscess, when formed, should be properly treated, but, as before intimated, it is still more important to prevent its occurrence, which may usually be done by timely and judicious homœopathic treatment.

CHAPTER XI.

OBSTETRIC OPERATIONS.

FORCEPS.

The precise time when the forceps was first employed, has not been well ascertained. It is generally believed that Dr. Paul Chamberlen was the inventor of the instrument. For some time, however, he kept it a secret, and used it privately, as is supposed prior to the year 1647. It was not, however, generally known till long after that time. The forceps devised by Chamberlen, of which the late Prof. C. D. Meigs possessed and exhibited to his classes what he supposed to be an exact fac-simile, was extremely rude. Perhaps no instrument has passed through a greater number of modifications up to the present time; a circumstance which shows its estimated importance, and the desire cherished by the most eminent obstetricians, to fully evolve its powers and facilitate its employment.

It would be incompatible with the prescribed limits and scope of this work, to enter into a full description of the different forms of the instrument now in use. The usual method of attempting to convey a correct idea of these by means of wood-cuts, for the most part results in failure; as it is, an attempt to depict solids upon a plain surface, which can be successfully done only by a very exact observance of shading and perspective, such as we can hardly expect to find in illustrations accompanying books on midwifery. A far better idea can be gained by examining the instruments themselves, usually kept on hand by cutlers, who generally can exhibit the most approved forms used by the most prominent practitioners.

The most important requisites of a good forceps are the following:

1. That it be as light in all its parts as is consistent with the requisite amount of strength.

2. That the blades should be no wider than may be necessary to avoid too concentrated pressure upon a circumscribed portion of the cranium, and to secure a safe hold upon the head. If too wide, the difficulty of introduction is materially increased, while at the same time their mobility when within the pelvis is diminished.

3. That it should have sufficient length to grasp the head when necessary, at or above the superior strait.

4. That its cranial curve should be such that the inner surface of the blade may, when applied, come into as extensive contact as possible with the foetal head, and not rest merely upon a few points, while the pelvic curve should be so modified as to endanger as little as possible the tissues of the mother by undue compression or laceration.

5. The fenestræ or openings in the blades should be as large as possible, consistent with the requisite strength, so that the scalp of the child protruding through them, may serve to protect the maternal structures from undue direct pressure by the instrument.

The blades of the forceps perhaps still most commonly used in Great Britain have but one curve, namely, the cranial. This instrument is generally designated as the straight forceps. It is well suited for seizing and extracting the head when at the lower strait, but exceedingly awkward when it is necessary to take it above or at the entrance of the pelvis, or even when high in the cavity. On the continent of Europe and in this country, another curve is superadded to the above, termed the pelvic curve, which, when the instrument is introduced, corresponds with the curve of the sacrum. The latter instrument is, however, at present, meeting with more favor in the British isles than formerly. In the United States, so far as I know, it is almost exclusively used. In very nearly all cases likely to occur, it is vastly preferable to the strait forceps. I can think of no exception, unless it be when we desire to rotate the head in mento-posterior presentations of the face.

Several distinct methods of locking or fastening the blades together after they have been introduced, have been adopted. In the forms in use with us, the blades cross each other in their

introduction, and are afterwards brought together and secured by what is called the English or the German lock. The former consists in a mortise in the shank of each blade, by which one passes into the other when brought together; the latter has a mortise in the one shank, and a thumb screw in the other. When approximated, the thumb screw is received into the mortise, and with a few turns of the former the lock is secured. The long forceps in use with us, so far as I have observed, is furnished with the German lock; the short, or Davis' or Meigs' forceps has the British.

Another form of the instrument, said to be an admirable one, is that used by Prof. Lazarewitch, of Charkoff, Russia. In this forceps, the blades lock without crossing. They are simply opposed to each other and kept in place by a little button in the handle. It is claimed that the introduction of this instrument is easier than that of those requiring the crossing of the blades; that it is of no consequence which of the blades may be first introduced; that dangerous compression is prevented, and that from the arrangement and position of the lock there is no risk of pinching the maternal structures. These are advantages, it is true, but they may be all likewise secured by proper attention, with the instruments in common use.

Every practitioner who is in the habit of frequently resorting to the use of the forceps, usually has his own decided preference. This preference often depends upon other circumstances than the real merit of the forceps. The influence of former instructors, long habit, and often mere accident, may determine his choice. For my own part, I set out with the use of Davis' forceps, influenced no doubt by the eminent professor whose lectures I had attended, and whose dexterity would have enabled him to succeed with almost any instrument. After a few years practice, however, I abandoned Davis' forceps, and substituted that of Dr. Hodge, which I still consider a much superior instrument, and so far as I am able to judge, the best in use among us. I prefer Dr. Hodge's to Davis', because the former is long, while the latter is short, and not so well adapted to cases where the head has to be taken at a considerable height. The blades of Davis' forceps are wide and diffi-

cult of introduction, especially in primiparæ, or when there is rigidity of the parts; whereas the blades of Hodge's, which are perhaps as narrow as is consistent with their purpose, admit of easy introduction and of being readily moved when within, so as to bring them into the desired position. Davis' forceps is furnished with the British lock, which although possessing the advantages of some yielding mobility, is not perhaps entirely secure, while Hodge's instrument is fastened with the German lock, which can be so adjusted as to admit of all necessary motion, while at the same time there is no danger of the branches becoming unlocked in the course of an operation.

Whatever instrument we adopt, it is probably better to adhere to its use alone, at least in all ordinary cases. It may be well enough to have another in reserve for very special occasions. But by restricting ourselves to the use of a single instrument, we develop more fully its powers, become more familiar with all its applications, and probably, on the whole, obtain better results than we should do by having several in use at the same time.

The occasions or emergencies requiring the employment of the forceps are elsewhere treated of in this work. It will be our business in this chapter, therefore, simply to point out the mode of using this invaluable instrument, and designate the proper moment for its employment, when this is deemed necessary.

When we have decided upon the expediency of an operation, we should inform the patient and her friends of our decision, explain to her our reasons, especially if she be intelligent, and quiet her apprehensions by assuring her that she does not incur any serious risk by submitting to our wishes. If she be already under the influence of chloroform, this procedure would of course be unnecessary. But many women while in possession of consciousness, have an insurmountable horror of the "use of instruments." When we consider how frequent is their abuse, this is not at all wonderful.

The acquiescence of the patient being secured, the next thing to be attended to, is her position preparatory to the operation. An important question is, what should this be? British

obstetricians prefer what is called the usual obstetric position—that is, to lie as in ordinary labor, upon the left side, the knees drawn up, and the legs flexed at something like a right angle upon the thighs. They claim for this position that it disturbs the patient less, as she requires no removal or additional adjustment, and is therefore less excited or alarmed, than if more formal preparations were made. This may be true in whole or in part, but it is more than doubtful whether these supposed advantages are not much more than counterbalanced. In this position she must necessarily have her hips drawn very near the edge of the bed, so as to lie, one would think, in a very constrained and uncomfortable posture. The operator, too, must labor under disadvantage, for want of ready access to his patient. Of course habit would, in some measure, remedy this; but I cannot refrain from the belief that the selection of this position is not so much from any real advantages it possesses, as from hereditary or national predilection. The forceps may be applied by an expert operator in almost any posture of the patient, but when there is no urgent contra-indication, we may as well as not avail ourselves of the advantages of position, as it may thus be much more agreeable to ourselves and much less dangerous to the patient. For my own part, I greatly prefer to have the patient placed across the bed, and upon her back, her hips drawn quite near the edge, for this will cause her no discomfort, as she will have the whole width of the bed to support her. Two chairs are placed beside the bed, front to front, but sufficiently far apart to allow the operator to stand between them. The limbs of the patient, projecting beyond the bed, are flexed at the knee, and a foot placed upon each chair. Some light covering is thrown over each limb for protection, and a sheet or quilt from the bed should be drawn over her person, to prevent exposure. An assistant on each side takes charge of the limbs, by firmly taking hold of the knee with one hand, and of the foot or ankle with the other. The body of the patient should be slightly elevated by bolsters, etc., placed underneath, and steadied, if possible, by a strong and reliable assistant—the nurse, if present, will often do very well. The blades of the forceps should now be warmed

by immersing them in tepid water, hastily wiped dry, and anointed *externally* with olive oil or a little fresh lard.

If there be no contra-indications to the use of chloroform, or no serious objections on the part of the patient or her friends, I would advise that she be rendered insensible before the introduction of the blades of the forceps. She will thereby generally retain her position more steadily, and of course avoid the danger of injury from the instrument through violent movements. She will also escape suffering both from the introduction of the blades and from extraction, a matter of no small importance, at least to herself, and what is perhaps no less to be desired, will retain no horror of instrumental delivery, to harass her with the dread of a like catastrophe in future labors. Another advantage of chloroform is, that it suspends to a considerable extent reflex action, and by thus partially holding in check the action of the womb, so far as dependent upon that cause, often greatly facilitates the introduction of the blades.

Formerly it was my practice to introduce and lock the blades before I administered chloroform, and pressing upon the handles, to ascertain by questioning the patient whether I had included any of her structures in the grasp of the instrument. But for some years past I have abandoned that precaution as unnecessary, and thus far have had no reason to repent of this course. I have, however, been the more careful to avoid such accident when the patient was not in condition to apprise me of its occurrence.

While I am myself most thoroughly convinced of the great utility of chloroform in forceps operations, I am aware of the many objections brought against it, even by respectable members of the profession, and especially by those who have never tried it. I will not here stop to answer any of these; it is enough for me if I can annul, or even diminish the sufferings of my patients without doing any present or prospective injury. I envy no man his feelings, who can coolly witness the agony of an instrumental labor, such as it at least sometimes is, when by dismissing his prejudices or his fears, he could save this fearful penalty of maternity. At the same time I would say to the young practitioner, be cautious.

The next step is the introduction of the blades. How is this to be done? According to authors and teachers generally, the answer to this question is long, complicated, and often not very intelligible. The truth is, the same unvarying rules have not been universally accepted and taught. With most, however, the object has been to apply the blades to the sides of the head of the child whatever might be its position, and however high or low it might be in the pelvis, even (if we understand them rightly), above the superior strait. That very eminent American obstetrician, Dr. Hugh L. Hodge, admits of no exception to this rule, but when the head is locked at the lower strait by the bi-parietal diameter. In this case, he will allow the blades to rest respectively upon the occiput and forehead; and we may add, it is very difficult to conceive how in that circumstance they could be applied in any other way.

To attain the object above stated, namely, to apply the blades to the sides of the head, whatever its position or wherever its place in the pelvis, would manifestly be often difficult, and sometimes practically impossible. Hence the rules laid down to accomplish this object are numerous, sometimes obscure, or even unintelligible, and not unfrequently as given by different authors, contradictory. We have reason too to believe that young and inexpert practitioners in their endeavor to recall and follow these rules at the bedside, frequently do serious injury to mother or child, or both.

We will endeavor here to indicate a simpler and, as we humbly believe, a better method; a method which may be said to reduce the numerous rules for the application of the forceps to a *single one*, or rather to substitute a *single one* in the place of all others.

We should first, as usually enjoined, ascertain as nearly as possible the position of the head. I say *head*, for if any other part present, the forceps has nothing to do with it. This cannot always be certainly determined, but generally it may be. If we can reach the occiput in nearly all cases, it differs sufficiently from the forehead to distinguish it from that part, and of course to enable us to determine to which side it is turned. The direction of the sagittal suture and the position of the

fontanelles are generally relied upon as guides in enabling us to decide this point. A little reflection will lead the student to see how he may avail himself of these to ascertain the position of the head. If, however, we cannot determine the exact position, an approximation to it is all that is absolutely necessary.

We will suppose all things ready, as we have before indicated, that the woman is arranged in the posture for which we have expressed our preference, which we need not again describe, and that it is Dr. Hodge's long forceps that we are about to use. We first oil the index and middle fingers of the right hand, carefully insinuate them into the genital fissure, carry them up in contact with that region of the foetal head, which is turned to the *left side* of the mother. If the head have not entirely escaped* from the womb, we must carefully lift, as it were, the still encircling lip from the child's head, so as to leave room for the blade to pass between them. We must continue to support the attenuated section of the os uteri upon the dorsal side of the fingers until the instrument is introduced within. We then with the left hand take hold of the blade, which, from its shape, we readily determine should occupy the left side of the pelvis. In Hodge's forceps, this is the one that carries the thumb-screw. It is held very much in the manner we usually hold a pen. The handle is held slanting and nearly over and parallel with the right groin of the woman; while the point of the blade is inserted along the palmar surface of the insinuated fingers, and in *close contact* with the foetal head. The object now is to carry up the instrument so that the point follows the convexity of the cranium, until it has reached the situation where it is to be left. While this movement is being executed, the handle, at first nearly parallel with the right groin of the patient, is carried over towards her left thigh and depressed so as to rest considerably below it, and if not held in the hand of an assistant, is supported by the posterior commissure. It is better to leave it

* Unless the os uteri be well relaxed and very dilatable, we should not attempt to pass the forceps within it. It will be better to wait under ordinary circumstances till the head has fully passed from the womb.

thus than to commit it to the care of an inexperienced agitated nurse, or like person, who may be present.

When the left blade is carried up to its place, the right is introduced *above* it in a similar manner, the hands changing office, and the operation being reversed. It must be remembered that no force whatever is to be used in this stage of the operation. The blades should be held so lightly that force is impossible without taking a firmer grasp. If the point be arrested in its progress, we may be sure it is going wrong, and instead of compelling it to advance, the blade should be partially or wholly withdrawn, and a second attempt made. We should be careful to make the point of the instrument closely hug the head; it cannot go wrong while following the sphericity of the foetal cranium. We should always desist from our attempts at introduction *during a pain*. The blades thus introduced *along the sides of the pelvis*, no matter where the head may be, whether at the superior strait, in the cavity, or at the lower strait, will lie the one upon the one extremity of it, and the other upon the opposite. If at the superior strait, the one will rest upon the occiput and the other upon the os frontis, or frontal bone, or nearly so. If it have descended into the cavity, it is likely to be grasped more obliquely; and again, if the head have already reached the lower strait and completed its rotation movement, the blades of the instrument will lie upon its sides.

When we have succeeded in introducing the blades of the forceps, the next step in the operation is to procure an easy lock; that is to bring the handles into such proximity and correspondence that the thumb-screw on the one can be introduced into the mortise or notch in the other. Here, again, no violence must be used to effect this object. If we do not at first succeed, we must with all gentleness so alter the position of the blades by partial withdrawal of them, or such other movements as common sense suggests as likely to effect the object. No specific rules can be given that will apply to all cases, and if the operator have not sufficient ingenuity to see what manipulation is likely to assist him to the attainment of his purpose, he had better abstain from the operation alto-

gether. If, however, the blades *be well carried up*, and the *handles well pushed back* toward the posterior commissure, an easy lock will very generally be readily procured. The observance of this latter expedient is *very essential* to success. When the mortise fairly embraces the stem of the screw, a few turns are given to the latter, just sufficient to prevent the blades from separating, without making the lock too tight or unyielding. The next step in the operation is extraction. To effect this, we grasp the handle of the forceps with the right hand, in order to apply the requisite force, while a couple of the fingers of the left may be applied to the top of the child's head. Here, again, we must carefully abstain from all *unnecessary* violence. In grasping the handles of the long forceps, we must remember they have great leverage power. When merely extraction is the object, without compression, it will be sufficient to seize the instrument near the lock, so that very little compressive force will be exerted. We need not violently squeeze the head to keep the instrument from losing its hold or slipping. If the blades be well carried up, in ordinary cases, they will not slip; the maternal parts will retain them in place. Perhaps they are more likely to slip when *violently* compressed than when gently held. We must remember, too, that we are supposed, generally at least, to have in our grasp the head of a living child, the continuance of whose life depends upon our skill and care.

If the head be taken at the superior strait, the extracting force should at first be applied, as nearly as we can, in the direction of the axis of that strait, and varied as the head approaches the outlet. A good rule will be to apply the force in the direction which the handle of the forceps, left free to move, may point. This will be determined by the head moving in the direction of least resistance. The instrument should be so held and traction so applied that the handle may rise, and the whole instrument rotate in our hand, if the advancing head dispose it so to do. What we have to do, is to apply the *vis a fronte*, and leave the head to select its course according to the law laid down in the chapter upon the mechanism of labor.

Some advise a simple extracting force, contending that the forceps is or should be regarded as a simple tractor. Others, and I think with better reason, maintain that the instrument is not only a tractor but a lever, and that its leverage power should also be subsidized in delivery. While authors generally admit that the forceps is competent to act as a lever, the exact nature of its leverage power seems not to be so clearly understood. It has been represented as a double lever, the lock or thumb-screw being the fulcrum upon which each blade or separate lever turns. This view is correct, if we regard only its compressive power. When used simply as a compressor, each blade acts as an independent lever, and the force of each is in a direction exactly opposite to that of the other. These forces, however, do not *directly* tend to effect delivery, but only *indirectly*, if at all, by shortening one diameter of the fetal head. It is only when the oscillatory movement is given to the handle, that the leverage power of the instrument is called into play so as *directly* to contribute to the delivery of the head. Here each blade becomes alternately a lever and a tractor, and each of the sides of the pelvis of the mother alternately the *fulcrum*. When the handle of the instrument is made to sweep round toward the right thigh of the woman, the blade upon that side acts for the moment as a lever carrying the head somewhat forward, and the internal surface of that side of the pelvis is the fulcrum; while the blade on the opposite side performs the function of a tractor, tending thereby also to advance the head. When the movement is reversed, precisely the opposite action ensues. Any one may demonstrate to himself the alternate traction power of the blades by grasping his hand in the forceps, and then executing the oscillatory movement of the handle.

When the head is small and has been arrested only through want of uterine power, direct traction alone may be sufficient. But when any considerable resistance is to be overcome, we should unite a gentle oscillating movement of the handle from thigh to thigh, and thus combine the leverage power of the instrument with its traction force. This movement serves, as it were, to tide the head over any obstruction created by the

dragging down before it of the soft structures lining the parturient canal of the mother. When the head fits tightly, these structures are liable to be torn or otherwise injured by a simple, straightforward extracting force; whereas, by an oscillating or pendulum movement, when the head is thrown, say to the *right* side, the corrugated tissues on the *left* are permitted by their resiliency to fall back. Again, when the head is thrown to the *left* side, it as it were oversteps the tissues which had just partially receded upon that side, and allows those upon the other to fall back in like manner, and so on alternately, till the head has passed. Practically, all experienced operators know how much, in difficult cases, gentle and skillful oscillation contributes to the ease of delivery.

There should be no haste, at least in ordinary cases. "Time enough if safe enough," should be our motto. Sometimes, when only gentle aid is required, in addition to the natural powers, we may act very deliberately, relaxing our hold in the intervals of the pains, and adding our assistance only as they recur. But often a more speedy delivery will be proper, *always*, however, *occasionally intermitting* our efforts, in imitation of the natural process of labor. No general rule applicable to all cases can be laid down. When the resistance to be overcome is great, we should act deliberately, giving time for the moulding of the head, and the dilatation of the soft structures, through which it must pass. The compressing power of the pelvis of the mother, acting through the *vis a tergo* of the uterine force, or the *vis a fronte* furnished by the forceps, is much better than any compression by the violent grasp of the handle of the instrument, which, while it shortens one diameter of the head, lengthens another, and that the very one we desire to shorten.* On the contrary the compressing, moulding force of the pelvis, diminishes those diameters which encounter resistance, and lengthens only that which meets with little or none, namely, that corresponding with the axis of the parturient canal.

* It must be remembered that the contents of the cranium completely fill its cavity, and therefore when they are forced by compression from one diameter, they must distend the head in the direction of the diameter, at right angles to it. This may be illustrated by compressing a bladder filled with water.

As the extracting force is continued, provided the head advance, the handle gradually rises, as the presenting part sweeps over the curve of Carus, until it becomes, in some instances, nearly parallel with the abdomen of the mother. This movement should not be resisted, but rather encouraged.

When the top of the head reaches the perineum, and that organ begins to be put upon the stretch, great care is to be taken to prevent its laceration. This is avoided, not so much by furnishing any imaginary support, as by operating slowly and cautiously, so as to give it sufficient time to distend. Some advise the disengaging of the forceps, when the head rests upon the perineum, and the leaving of the delivery thenceforward to the natural powers. But it is to be remembered that in many cases requiring the forceps, the natural powers are for the time in abeyance, and if the head be abandoned there, it will remain there indefinitely. We much prefer completing the work we have begun, and not removing the instrument until we have fully delivered the head. As soon as the head is born, the instrument should of course be disengaged; and any further assistance that may be necessary should be furnished by the hands alone. A finger hooked in the axilla of the arm turned toward the sacrum, will give the requisite aid for the delivery of the shoulders.

We have thus far spoken of the introduction of the blades of the forceps *along the sides of the pelvis*, without any special regard to the situation or position of the head.

When the head is yet above the superior strait, or just entering the brim, its occipito-frontal diameter more or less nearly corresponds with the transverse diameter of the pelvis. Consequently if seized with the forceps introduced along the sides of the pelvis, in this situation, one blade will rest upon the back part and one in front. Fears, therefore, may be entertained lest the instrument should bruise and disfigure the features of the face. Practically, however, with care there is little danger of this. It will be remembered that as the head presents at the superior strait, it is strongly flexed upon the thorax, and becomes still more so as it dips into the brim. This flexion too, is no doubt still further increased by the compressing force of

the forceps. While one blade, therefore, rests upon the occiput, the other expends its force upon the os frontis, or frontal bone of the cranium, and not upon the face. We have noticed but one exception to this, of which we have elsewhere spoken at some length. In this case there was a fluctuating tumor immediately beneath the chin of the child, entirely filling the space between the chin and thorax, and completely preventing permanent flexion. The head failed to descend, or even fairly to enter the superior strait. The forceps was applied before rotation, if possible at all, could have taken place, and delivery was effected without any unusual difficulty. A slight indentation, which passed away in a very few days, was found close to the root of the nose; the skin was neither cut nor abraded. But if even under the like unfavorable circumstances, the blade situated in front of the head should rest upon the face, so little compressive force is *usually* needed, that we may avoid doing any serious, permanent injury.

Again, it may perhaps be doubted whether the head brought down in this manner, can pass the inferior strait without effecting the movement of rotation. That it can, has been again and again practically demonstrated. Prof. Tarnier, the annotator of Cazeaux' Midwifery, admits that it may be sometimes so delivered; we believe from practical experience and observation that it may be generally so, and that without serious injury to either mother or child, unless the latter be unusually large, or the pelvis of the former abnormally small. Some assert that the head not unfrequently rotates *with* the forceps—some that it occasionally rotates *within* the forceps. We have certainly experienced the former, and think we have met with at least one case of the latter. It is moreover probable that when the instrument is held with sufficient delicacy, the former movement will usually take place when the occipito-frontal diameter of the head is too long to pass the transverse diameter of the lower strait. When the head rotates *with* the forceps, known by the twisting of the handle in the hand of the operator, it is better to disengage and re-apply the instrument. We will probably then be able to apply the blades to the sides of the child's head; or if the latter be not sufficiently rotated

For this, we may attempt to complete the rotation with a blade of the forceps, at least so far as to accomplish this object.

Again, when there is reason to suspect that the head when seized by its long diameter *at the brim*, cannot pass the lower strait without rotation, it will be best, when we have brought it down within the cavity of the pelvis, to detach the forceps, rotate the head with a blade of the instrument, the fingers or the lever, and then reapply. This manœuvre may not always be practicable, but generally is. We can then deliver, having the long diameter of the head to correspond with the long diameter of the inferior strait.

When the head has already descended considerably into the cavity, and rotation has partially taken place before we apply the forceps, the obliquity may be such, that introducing the blades along the sides of the pelvis, as we have above indicated, they do not settle in sufficiently exact opposition to, or in parallelism with each other, to rest steadily upon the cranium, or to admit of an easy lock. When this is the case, they had better both be withdrawn, and complete rotation effected as above directed. This done, their reapplication will be easy and satisfactory.

If the head have already reached the inferior strait, or be resting upon the floor of the pelvis when we are required to operate, the introduction is easy, inasmuch as to carry the blades up the sides of the pelvis, is to place them upon the sides of the foetal head. This of course assumes that rotation is completed, and the occiput or forehead turned under the arch of the pubis. But very slight extracting force is here necessary, the wedge and leverage power of the instrument being often sufficient to effect delivery.

As soon as the operation is completed, the patient, unless in a state of extreme exhaustion, should be replaced comfortably in bed, and special care taken to remove all wet clothing from contact with her person. This should be done not by at once stripping off her clothes, but by withdrawing wet and soiled garments, and interposing between them and her skin dry and warm skirts. She should be strictly enjoined to avoid all conversation, excitement and exertion of every kind. As has been

advised at the close of normal labor, a few drops of the tincture of arnica should be diffused in half a tumbler of water, of which a teaspoonful may be given every two hours.

It is not uncommon, after instrumental delivery, for the patient to be unable to pass her water. This should be particularly attended to. If she have been much exhausted, it would be well to introduce the catheter and evacuate the urine, without requiring her to make the effort to pass it herself. Most women, at least shortly after delivery, are unable to pass their water without assuming a more or less erect position. This should be avoided if possible, *immediately* after all severe labors as flooding or syncope or both may be the result.

Before closing this chapter, it may be well, although we have repeatedly, in the course of this work, adverted to this subject, to speak somewhat more fully and connectedly of the precise moment when this operation, when deemed proper or imperative, should be undertaken.

British practitioners formerly advised us not to apply the forceps until an ear could be felt—that is, till the head was low in the pelvis. This precept seemed to be given irrespective of the suffering or exhaustion of the patient. Its strict observance necessarily led to a frequent resort to craniotomy. Again, it was thought by some that the head *must in all cases* have passed entirely out of the mouth of the womb before we should interfere. Some again fixed the time for resort to the forceps by the number of hours the head had been stationary in the pelvis, or resting upon the perineum. They attempted to demonstrate the evils resulting from a too early use of the instrument, by pointing to cases of contusion, inflammation and sloughing of the vagina and neighboring structures. We now, however, believe that these distressing accidents more frequently arise from too long delay, than from precipitancy. When the head is strongly driven against these tender parts by a womb vigorously endeavoring to overcome resistance, or when they are pressed by the cranium which has become wedged within them, although the uterine powers may have failed and ceased to act, the circulation is arrested, and this, aided by the prostrated vitality of the patient, leads to a low

grade of inflammation—call it what you please—and perhaps subsequent sloughing.

To determine the exact time when interference is proper, we should be guided by the condition and necessities of the patient. It matters not whether according to the old classification the labor be natural or preternatural, if we find the powers failing or *unequal* to the task, and the case be one admitting the application of the forceps, it is our solemn duty to render assistance through its aid. We must not stand as idle spectators of the struggle, nor content ourselves with the hope so, that the *powers of nature* will ultimately prevail; we must become forthwith parties in the contest, and ensure their safe and speedy triumph.

We will derive aid in arriving at a correct conclusion, by a just appreciation of the health, strength and powers of endurance of our patient. In the case of constitutionally feeble women, or those who have been debilitated by pre-existing disease, and whose natural resources there is reason to fear will be inadequate to the task, at least without leading to extreme and dangerous exhaustion, it will be well to apply the forceps at a comparatively early period of the labor. In such patients, it is of the *utmost importance* to husband their resources. When intensely prostrated, they often become the prey of some fatal accident or puerperal disease; or if they recover, it is through a tedious convalescence, and perhaps regain at best but imperfect health. In such cases the forceps may be introduced, not with a view to immediate extraction, but to aid the patient at the recurrence of each successive pain.

Extracting force may be applied at the commencement of a uterine contraction, and the grasp relaxed when the pain passes off. The womb is thus relieved of much of its task, and, as it were, encouraged to increased effort.

In a word, we should carefully watch the condition of the patient as labor progresses, and hold ourselves ready to discharge our duty whenever her failing powers hang out the signal of distress. "The forceps," said the late Dr. C. D. Meigs, "is the *child's* instrument," but it should also be remembered it is the *mother's*, too.

Thus much in relation to the safety of the mother, but that of the child no less, demands our attention. Unreasonable delay may also jeopardize the life of the latter, at least under certain circumstances. It is well, therefore, to know what these circumstances are, and when a regard for the safety of the child should enter into our calculation in determining the proper moment for resorting to the forceps.

It is surprising how often the child, after long delay, and even when subjected to the powerful action of the womb, will cry vigorously as soon as it is born. It would seem, therefore, that delay alone is not necessarily fatal to its life.

So long as the action of the womb is intermitting—a quiescence of considerable length occurring between the pains, the fœtus will bear a great amount of pressure without fatal injury. But when the pains are not only violent but continuous, as if provoked by Ergot, there is great danger to the child from their direct effect upon the brain, as well as from compression of the cord and premature detachment of the placenta, accidents which under these circumstances are liable to occur. When such is the case a resort to the forceps, where there is no imperative contra-indication, should be seriously thought of.

When at any point in its descent the head ceases to advance, but recedes somewhat in the interval of the pains, there is no special reason for apprehension, even though the womb be acting with great vigor. On the contrary, if the head remain stationary, do not in any degree fall back when the pain subsides; delay is then dangerous, and may be fatal to the life of the child.

When, in connection with any of the foregoing circumstances (or, indeed, independent of them), the fœtal heart-beats are manifestly growing feebler, and the accustomed fœtal movements less distinctly felt by the mother, danger is to be apprehended, and it becomes our duty to act accordingly.

Within the last few years a resort to the forceps has become much more common than formerly. This has arisen in part from the happier results obtained in the application of the instrument, owing to its greater perfection, and greater skill and simplicity in its application. The fact, too, that many of the

disasters once charged to the premature use of the forceps, are now shown to have been due to culpable delay, has done much to remove the unreasonable prejudice that long existed against an operation so conservative of maternal and infantile life. It may be, however, we are at this moment in danger of drifting upon the opposite extreme. While, therefore, we advocate the free and intelligent use of this noble instrument, we would solemnly warn, especially young practitioners, to guard against its too frequent and unnecessary employment in obedience to a mere whim of fashion.

VERSION.

The term version, or turning, is applied to that operation by which one part of the fœtus is substituted for another, with a view to greater advantage in delivery. There are two varieties of this operation, respectively called cephalic version and podalic version. The former supplants the existing presentation by bringing the *head* to the entrance of the superior strait, the latter the *pelvic extremity* of the child, that is, the breech, the knees, or the feet.

When cephalic version is practicable and not contra-indicated by co-existing circumstances, it is preferable to podalic, inasmuch as delivery by the head is usually safer to both mother and child than delivery by the feet.

And first, we will speak of cephalic version. This method of turning has at different times in the history of midwifery been proposed and advocated, but has again as often sunk into neglect. Lately, however, since what is called the bi-manual method of operating has been more distinctly described and successfully practiced, it has once more come into favor, and is more likely now to retain its reputation than heretofore.

Cephalic version is generally applicable to those cases where the head, although not corresponding to the entrance into the upper strait, is nearer to it than is the pelvic extremity of the child, where the waters either have not been evacuated at all, or have been but partially drained off, and where the presenting part is still movable. Before proceeding to operate, it will

of course be necessary to ascertain the presentation of the foetus, that is what part is nearest the entrance of the superior strait, and, as it were, waiting to engage in it, and against which the finger first impinges, when it is within reach, in making the examination. We should, moreover, if possible, satisfy ourselves of the position of the presenting part, or its relation to the pelvis of the mother. Having ascertained these particulars, the next thing to consider is the proper position of the patient, in order to facilitate the operation. She may continue to lie upon the left side as usual, her hips being placed as near as possible to the edge of the bed, her right leg being elevated and supported by an assistant, with one hand placed under the knee and the other grasping the ankle. This will remove obstruction out of the way of the right hand of the accoucheur as he employs it in external manipulations. The head of the patient had better be directed toward the middle of the bed, so that the operating arm be not unnecessarily bent or twisted, and all pillows and supports removed, so that the pelvis, shoulders and head be as nearly as possible upon the same level. If, however, the case is likely to prove difficult, the position upon the back, similar to that we have advised for the forceps operation, is to be preferred. The objection that it gives additional trouble and disconcerts the patient, is not a very valid one, when weighed against real advantages. When the woman is very weak, however, or very nervous and apt to be alarmed by what might seem to her more formidable preparations, this arrangement, unless considered very important, had better be dispensed with. Before proceeding to turn by this or any method, the os uteri should be so far dilated as to admit the introduction of two or three fingers and dilatable—that is, soft to the touch, so as to afford assurance that it will readily yield to distending force. We will suppose the case to be a presentation of the shoulder, the membranes are either intact or have been lately ruptured, and the presenting part is not deeply forced down into the pelvis, but still movable at the brim. The patient may or may not be under the influence of chloroform, although this agent is a most important adjuvant in both varieties of version, as it generally secures steadiness

on the part of the patient, a very great advantage. The accoucheur should strip off his coat, roll his sleeves above the elbows, anoint thoroughly the dorsal surface of the fingers and hand, and it may be well to introduce a piece of lard between the labia. Two or three fingers of the *left* hand are then gently insinuated into the vagina and carried up to the presenting part. Some difficulty may be experienced in the introduction from the labia being as it were inverted and pushed up by the fingers. This may be corrected with the fingers of the right hand parting the labia by a movement such as we use in separating the eyelids. In order to have the entire command of the presenting part, it will probably be necessary to carry the entire hand into the vagina, and this should be accomplished in the most gentle manner. We may succeed better by taking advantage of the presence of a pain if the patient be not anæsthetized, as her natural suffering will divert her attention from that caused by the introduction of the hand. When the presenting part is reached and well under the control of the fingers, it should be gradually pushed up, in the absence of pain, the head reached, and by a coaxing motion of the fingers drawn toward the entrance of the pelvis, while the right hand applied externally, operates upon the opposite pole of the fœtus, and in an opposite direction, that is, toward the fundus of the womb. This method is called *bi-manual*, because both hands are employed working to each other's aid, the one internally and the other externally; *bi-polar*, because both poles or ends of the fœtus are simultaneously acted upon.

When the head is brought fairly over the entrance into the pelvis, it should be retained there, if there be no reason to hasten delivery, until through the force of the womb it begins to engage in the upper strait, when the labor may be abandoned to the natural powers. But if for any sufficient reason it be deemed necessary to expedite delivery, the forceps must be applied, subject to the same rules governing their application, in a spontaneous or natural vertex presentation.

Cephalic version may also occasionally be effected, when the fœtus lies somewhat transversely and the head is too high to be felt by the ordinary examination per vaginam. In the first

place, the patient, laid upon her back, should be fully anæsthetized with chloroform, and the position of the head ascertained by palpation. One hand then is externally applied above the head, and by a sliding movement, gently presses it down toward the entrance of the superior strait, while the other hand acts in a similar manner upon the other end or pole of the fœtus, and in the opposite direction. When the head is brought sufficiently low to be within reach, the fingers of the left or right hand, as best suited, may be introduced into the vagina, carried up and made to play upon the cranium, so as, with the aid of the external hand still operating, to bring it over the entrance into the pelvis. When this is effected, the head should be retained in this position and the membranes ruptured, when, as the waters flow off, it will engage in the upper strait, and the labor, if there be no indication requiring prompt delivery, may be left thenceforward to the powers of nature.

Cephalic version, however, although greatly facilitated and extended by the introduction of the bi-polar method, accredited to Dr. Braxton Hicks, but probably practiced long before there was any written account of it, must always be limited in its application, and in very many cases requiring version, altogether impracticable. Where this fails, podalic version must be our resort.

As we have in the course of this work generally pointed out the indications requiring turning, it will be sufficient here to state that this latter variety of the operation should be had recourse to only when the former is deemed inapplicable, or upon trial has failed. Podalic version is justly regarded as a serious operation, both as regards the mother and the child, and should not therefore be adopted, unless the circumstances imperatively require it.

When we have decided that a case demands podalic version, the next point upon which we wish to satisfy ourselves is how shall we perform it?

In giving this information to the student we will first speak of the preliminary measures to be adopted, in order to ensure convenience in operating, safety and success.

It is generally advised, first to empty the bladder by means

of the catheter, and the rectum by administering an enema. If, however, we have required the patient, as we should do, frequently to pass her water during the progress of labor, the catheter may be dispensed with. In like manner, if the bowels have been freely evacuated shortly before labor set in, it is not likely that any accumulation has taken place demanding our interference. Under the opposite circumstances, the above precautions had better be regarded.

The position of the patient preparatory to the operation is another matter of importance. I have generally permitted her to retain that ordinarily recommended for natural labor, namely, upon the left side. It has the advantage, whatever that may be, of requiring but little change in the surroundings of the patient, and therefore avoids excitement or alarm. In difficult cases, however, I prefer the dorsal position, with the hips drawn near the edge of the bed, as advised for the application of the forceps. It is necessary when the patient lies upon the left side, that the right leg should be elevated, and so held by the hands of an assistant.

The bi-polar method is sometimes applicable also to podalic version. When this can be successfully employed, it much diminishes the risks to the mother, inasmuch as it is not necessary, in order to execute it, to carry the hand into the womb. It may, moreover, be commenced while there is yet less dilatation of the os uteri than would be necessary were we obliged at once to insinuate the whole hand through that aperture. The bi-polar method, where it is not manifestly impracticable, should always first be tried.

The left hand should be well oiled upon its dorsal surface and a lump of lard introduced between the vulvæ. It is better, as a general rule, to divest ourselves of the coat, and turn up the shirt sleeves above the elbows, although this precaution may not always be necessary.

If there be present no circumstance requiring speedy delivery, we may wait till the mouth of the womb is pretty fully dilated. If otherwise, if it be sufficiently so to admit one finger, we may commence the operation, by artificially promoting dilatation, either with the fingers or by introducing Doctor

Barnes' gum elastic dilators. When we can insinuate three fingers, we may begin to turn.

The fingers of the hand to be introduced are collected in the form of a cone, and tenderly carried up till, if necessary, the whole hand is within the vagina. The direction in which the occiput is turned must be well ascertained, and then by a dexterous, gentle motion of the fingers, the head is to be *propelled in that direction*, while the right hand applied externally, upon the opposite pole of the fœtus, is made to operate in the opposite direction. By this conjoined operation of the two hands, the head is made to ascend upon the one side, while the breech is caused to descend upon the other. The right hand, externally, is shortly applied to the ascending head of the child, while the left hand internally comes in contact with the knees, descending upon the side of the womb, opposite to that along which the head has ascended.

If the fœtus float in a large amount of amniotic fluid, it is not likely to remain stationary in the position in which it has been placed through the force exerted upon it by the hands of the accoucheur. It is better, therefore, if the membranes have not before been ruptured, when a knee comes within reach of the fingers of the left hand, to make an opening, and permit the waters, at least partially, to drain off. This will give stability to the fœtus, and probably enable the practitioner to hook down a knee. Either knee may be taken. Dr. Barnes prefers the more distant one, but if this be not easily caught, he does not think it worth while to lose time in searching. Traction upon the knee aided still by the co-operation of the hand upon the outside, will complete version, and bring the pelvic extremity of the child to occupy the lower portion of the womb.

The next step in the operation of delivery by podalic version or turning by the feet is *extraction*; for be it remembered, *turning* is one thing and *extraction* is another and a very different thing. We may *turn*, and when this is executed leave the future process to be completed by the natural powers, or we may supersede them by art. Generally, however, the same considerations that prompt us to turn, also demand delivery with as little delay as possible.

When, therefore, a knee is secured, we proceed to bring down the limb and apply sufficient traction, slowly and carefully, to cause the body of the child to descend. In doing this we must be careful simply to supply force, as far as possible in the axis of the superior strait. We are not to think of turning the child one way or the other, according to our views of the course it *ought* to take. We should hold the limb so loosely in our hand that it may revolve if so disposed, or allow the hand to be so passive, as to turn with the revolving limb. If simple force be supplied, we may rest assured that the body acted upon, if it move at all, will move in the direction of *least resistance* ; and that direction here is the proper one.

When the body of the child is born as far as, or a little past the umbilicus, we must see to the cord—prevent it if possible from being exposed to pressure. In order to effect this object, we should draw down a considerable loop of it, and remove the remainder so far as we can, to such situation as will give it most room, or place two fingers thrown slightly apart, one on each side of it, so as to form a channel between, in which the cord may securely repose.

The next difficulty to be encountered is with the arms. These members are usually inclined inwards and are folded in front of the child. When traction is made upon the body, they are liable to be displaced and carried upward through friction upon the maternal parts. Hence they sometimes oppose a very formidable resistance to the further progress of delivery.

If the child be small however, or the maternal passage wide, or both, these conditions coexist, even this accident may cause no trouble and the child be wholly born without any difficulty. If otherwise, however, it will be necessary to bring down the arms by the side of the child. In order to do this successfully and safely, it is necessary to bear in mind the construction of the joints, in what way they naturally bend, and carefully avoid forcing them to bend in an opposite direction. The hand should be passed up over the shoulder of the child and carried along the humerus until it reaches the elbow. The arm is then tenderly straightened by drawing it over the face

and breast and bringing it down by the side of the child. In the choice of the arm first to be operated on, Dr. Barnes advises us to take the one we can move with the greatest ease, for if this be brought down it leaves more space for the adjustment of the other.

After the arms are brought down the next difficulty to be encountered, is the delivery of the head. In the chapter upon breech presentations we have spoken so fully of the delivery of the after-coming head, that it is unnecessary to repeat what we have there said, or to add anything in this place.

Turning by the feet, while the membranes are still intact, or even where the waters are but partially drawn off, usually presents no very great difficulty, even where the bi-polar method fails and we are obliged to carry a hand up into the womb and bring down a foot. To perform this the left hand and arm are well anointed with lard, the former only on its dorsal aspect. The fingers, gathered in the form of a cone, are very tenderly insinuated into the os uteri, the membranes ruptured, if still entire, and the whole hand carried up within the womb until a foot is felt, and grasped. But it is not a matter of indifference which foot we seize. If the arm be prolapsed, we may know from examination whether it is the right or left. This determined, we take the foot of the opposite side, for this, when acted upon, will cause the most easy and natural rotation of the body of the child and ascent of the prolapsed arm. In general that foot should be taken which will rotate and turn the child with least violence to the articulations, prevent the unfolding of the limbs from their natural intra-uterine position, and that will most tend to throw the forehead into the hollow of the sacrum in the progress of delivery. In introducing the hand, we should advance only in the absence of pain, and if the uterine contractions be powerful, we should flatten the hand upon the surface of the child, until the pain subsides. When we have selected and seized the proper foot, we commence traction, operating during the pains, and suspending our efforts while they are absent. There should be no hurry—no violence. The hand not employed in traction, should be applied externally, to support the womb, and to as-

sist in completing version, by pressing up the head. When version is completed, it should aid the extracting force, by downward pressure. It is surprising with what facility turning is effected while the waters are retained, and if the membranes are first ruptured when the hand is carried up to operate, so completely is the aperture plugged by the arm that very little of the fluid escapes. The delivery of the child here is of course the same as when a foot is brought down by the bi-polar method.

But while the operation, as above described, is sufficiently simple, we are often called upon to perform it under very different circumstances. The patient may have been long in labor, the amniotic fluid dribbling away for many hours, so that we find the womb tightly embracing the child on all sides, indeed insinuating itself into all the sinuosities of the fœtus. Turning, when the waters are thus almost completely evacuated, is, to use the language of the late Prof. C. D. Meigs, "a horrible operation."

We have said, in speaking of cephalic version, the patient may be under the influence of an anæsthetic or not, as preferred by herself or deemed proper by her attendant. But in the case here supposed, *deep anæsthesia* is of the utmost importance. Indeed the success of the operation sometimes depends wholly upon this resource. I have succeeded in cases of this kind by the aid of chloroform, where, I believe, turning would have been impossible without it. But in order to be certain of its salutary effects, we must continue the inhalation until we secure complete insensibility to pain, which is usually attended by complete relaxation.

We will sometimes find the presenting part, the shoulder for instance, so completely forced down and blocking up the passage that all attempts at introducing the hand are baffled. But after deep anæsthesia is induced, we are surprised at the ease with which we overcome what was before an insurmountable obstacle. It is in these cases of the utmost importance that we use all gentleness and care in carrying up the hand, in desisting from efforts during pain, especially if the pains be violent, as they usually are, until the womb becomes quiescent

through exhaustion. The turning of the child is now effected with great difficulty, and it is, therefore, important we should operate slowly, giving the tissues abundant time to yield. Every step of the process should be taken with the utmost care and precaution.

Where there is no necessity for an *immediate* operation, and especially when we have no assistant present capable of administering the chloroform, so as to steadily keep up its effects, I would advise, as I have done when speaking of Deviated Presentations of the Head, to give the patient one-fourth of a grain of morphia, and wait for its effects before commencing the inhalation. If she be suffering very severe pain, the dose may be repeated or a somewhat larger amount given at first. When the patient is previously under the influence of morphia, a smaller quantity of chloroform is required, and the effect is much more *profound* and *persistent*. Indeed, through the combined aid of these two agents, I have turned and delivered in the most difficult cases, while the patient did not utter a moan nor move a limb throughout the whole operation. If morphia be previously given, it is important that the delivery should be conducted slowly, to avoid *shock*, the dangers of which, I think, are probably increased by the administration of that drug. Indeed, under circumstances wherein we have reason to apprehend severe shock, morphia had probably better be omitted. Hydrate of chloral, 15 grains, repeated at intervals of twenty minutes, may, in that case, be preferably used; but I think morphia unsurpassed in its power to relax spasm, and bring such cases completely under our control.

I know this practice will be strongly objected to by some as unhomœopathic. But I apprehend these cases lie outside the homœopathic law, and even that, nothing to its discredit. I no less believe in the truth of the law of similars, because I know it is not applicable to the setting of a broken limb, or the reduction of a dislocated joint. Our aim is here to bring the impossible within the limits of possibility, and to save our patient from horrible suffering; and if we can devise any means to accomplish these purposes without entailing upon her lasting injury, it is our duty as men, and especially as

physicians, to adopt such means, asking no questions and soliciting no man's approbation.

CRANIOTOMY.

Under circumstances to which we have repeatedly alluded in the course of this work, craniotomy, or the opening of the head of the child, becomes an unavoidable necessity if we would save the life of the mother. To decide when such necessity exists is always a painful and solemn duty, unless we have sufficient reason to believe the child is no longer living, when of course the safety of the parent is the only object of concern. Otherwise, nothing but the saving of the life of the mother can justify us in taking away that of the child.

The operation when fully performed, consists of two steps or stages, namely, perforation and extraction.

The instruments employed for these purposes have been various. For perforation, Smellie's scissors has perhaps been most extensively used. It consists of two blades jointed together similarly to the blades of the instrument after which it is named. These are made very strong, with cutting edges upon the back, and when brought together form a sharp point at the ends well adapted to perforate the skull. An instrument invented by M. Blot is preferred by many to the foregoing, and is perhaps likely to supersede it. It is constructed pretty much upon the same principle as Smellie's scissors. Both these instruments may be found with the cutlers, where an accurate idea of their form and peculiarities may be had.

When we have decided upon the necessity of this horrible operation, the first thing to be done is to place the patient in a convenient position, so as not only to render her as comfortable as possible, but so that we can have the most ready access to her, and be the least hampered in the performance of our duty. She may be placed either upon the left side or the back, but generally, the latter is much the best. Her fears, if she be conscious, should be as far as possible removed by assurances that she incurs but little personal risk in submitting to the operation. If there be no cogent reason to the contrary, she had

better be fully anæsthetized and well steadied by reliable assistants. All things being properly adjusted, we proceed as follows:

If we select for perforation the instrument of Smellie or Blot, we take it in the right hand, while two fingers of the left are passed up the vagina till they reach the head—we must *be sure* that it is the head we feel. A spot should be selected where the perforator may be placed most nearly at right angles to the surface of the cranial bone, in order to diminish the chance of slipping. The point of the instrument is then carried up in contact with the inserted fingers and protected by them, until it reaches the selected spot upon which it is firmly implanted, and then by a rotating movement it is forced through the skull. The sensation imparted to the hand will inform us of this event. The handles are then opened and the instrument rotated so as to enlarge the opening sufficiently for the contents of the cranium to be discharged. When this is done, the head collapses and may usually be extracted by one of the instruments in use for the purpose. That which has hitherto been most commonly used is called the crotchet, a most dangerous instrument. It is in the form of a hook, the point of which is flattened, and the shaft terminated by a handle crossing it at right angles like that of a tooth key. The hook is fastened by its point upon the skull, either outside or within the perforation, and in either case is liable to slip and do great injury to the soft structures of the woman.

If this instrument be used at all, the point should be very carefully guarded in the act of extraction by the fingers, which are themselves very liable to be wounded. A still better advice is to discard the crotchet altogether.

The late Dr. C. D. Meigs of Philadelphia has proposed two pairs of forceps, known as Meigs' Craniotomy Forceps, which answer an excellent purpose. They resemble pincers with long handles, the one bent in the mandibles, the other straight. The latter, when the skull is quite soft, may be used to perforate, the former to extract.

I have performed the operation very satisfactorily as follows: I select as a perforator an instrument resembling a chisel; this

implement itself will answer the purpose very well, if a better be not at hand. If used, the corners and edge should be somewhat blunted to avoid cutting the maternal parts. A better instrument however may be imagined by supposing the chisel terminated in a flat angular point, with edges sharp enough to penetrate the cranium under moderate force, but not to cut the soft structures of the mother, with which it may accidentally come in contact. The instrument is forced through the skull by a direct, not rotating movement, and thus makes in the scalp an incised, not lacerated wound. If the instrument do not readily penetrate, a slight stroke or tap with a small hammer upon the end of the handle, while the point is securely held in place, will accomplish this object. The instrument is then rotated, and will thus enlarge the opening in the skull to more than the width of its blade, which may be half an inch or more, while all the debris of bone will remain within the scalp, inasmuch as the wound in the latter is a simple gash, the lips of which when parted, tend immediately to fall together and enclose the crushed bone underneath. We then take Meigs' bent forceps and carefully guiding the upper mandible inside the cranium, and the lower between that bone and the scalp, seizing a portion of the skull, we remove it, carefully guarding it with the fingers as it is withdrawn, so as not to wound the mother's tissues with its sharp edges. We should be careful not to tear away the scalp in this operation, but simply to remove the underlying bone. When we have sufficiently enlarged the opening to give free exit to the brain, which should be thoroughly broken up by the perforating instrument before it is withdrawn, we should then take a firm hold upon the margin of the perforated bone, the mandibles being adjusted as above directed, and carefully extract in the axis of the parturient canal. While we make extraction, the inserted fingers should be still kept near the point of the instrument, so that should the portion of bone fastened upon break off, we may prevent it from wounding the passage. This accident is not likely to happen, but had nevertheless better be guarded against. When the scalp is thus left intact except the mere incision at first made by the perforator, it is manifest

its edges will overlap the edges of the cranial bone, and prevent them, in extraction, from lacerating the maternal tissues.

The use of the speculum has been advised in the operation of craniotomy, but it seems to me it would be very much in the way, and after all contribute no important aid. Any one who cannot trust his sense of touch, had better employ another to operate for him.

The operation is most simple when the top of the head can be selected for the opening, but this cannot always be done. With proper care and dexterity other parts may be perforated and the operation successfully performed.

CEPHALOTRIPSY.

This operation contemplates the reduction of the size of the foetal head by the crushing of the cranial bones, in order to effect delivery in cases where the deformity of the pelvis is too great to admit of it, with safety, by craniotomy alone. Although some allusions seem to indicate that an indistinct idea of the operation was entertained long ago, practically it is of recent date. As the hint was probably first taken from the action of the obstetric forceps, which in early days no doubt too often and unintentionally served as a cephalotribe, cephalotripsy must have been introduced subsequently to the invention of the former instrument. The obstetric forceps of Coutouly, Assalini, Delepech and Lauverjat acted as powerful compressors, and used as such would readily suggest the idea of a stronger instrument to be applied to the crushing and the further reducing of the size of the foetal cranium.

The credit of inventing the cephalotribe (the name given to the instrument used in the operation, of which we now speak) is attributed to A. Baudeloque, nephew to the celebrated obstetrician of the same name. Its construction is similar to that of the obstetric forceps, but the blades are narrower and stronger than those of that instrument, and usually destitute of the pelvic curve, and possessing the cranial, only in a slight degree. Various contrivances have been adopted for applying the compressive force. Some modification of the screw power has been

the most common. A screw is passed from one handle through the other, and worked by a lever in the form of a windlass. It is manifest this would exert immense power in approximating the handles, and act with a proportionate force in the crushing of the head.

The instrument as above described is a heavy and clumsy one, of difficult application, and in some respects lacking in efficiency when applied. M. Cazeaux enumerates the following defects, viz.: "1. It is too straight to accommodate itself to the curvature of the pelvis, and it is therefore applied with difficulty to the side of the head. 2. As the clams are nearly plain, they open like a pair of scissors, and do not encase the head as the concave blades of the ordinary forceps do; consequently they are liable to slip, and thus give rise to serious accidents. 3. Traction made by it are very often ineffectual, even when well applied to the head; because it necessarily draws in a direction different from the axis of the superior strait, owing to the absence of curvatures in the edges of the blades."

Influenced by these serious objections, M. Cazeaux procured a forceps with a curvature, as he says, slightly exceeding that of Levret's, which he considered more easy of application, and more safe and effective in traction. To this he also applied the screw arrangement to secure the crushing force. Where the screw and windlass are used it is important their mechanism should be such as to admit of easy application and detachment; otherwise by their weight and inconvenient extension, they render the instrument difficult and even dangerous in manipulation.

We have thought the following modification of the cephalotribe might be a convenient one, as it certainly would be more simple than that in common use. Let a pair of forceps be made similar to those of Cazeaux above described, sufficiently strong in all its parts, and with handles so short as to be convenient in introduction, but sufficiently strong to bear any required amount of force. At the distal end of each of these handles let there be an arrangement for connecting an extension long enough to secure any desired amount of leverage,

simply by the application of the hand. This, perhaps, might be effected by making a socket in the end of the handle similar to that we sometimes find in one leg of mathematical compasses or dividers, when it is desirable occasionally to substitute one leg for another. The extension piece could be slipped into the socket after the instrument was introduced and locked, and firmly secured by a small thumb screw inserted in the side. This arrangement, it is thought, would avoid the inconvenience and danger to the patient in the introduction, arising from the handling of a heavy instrument, and the force being applied directly by the hand, the operator could more accurately feel through the instrument, and be more fully conscious of the effect produced. It would also be more manageable in applying traction, and more readily withdrawn, for reapplication, or detached when the operation was finished.

Generally, when it can be done, the head should be perforated, as in ordinary craniotomy, before the application of the cephalotribe. This allows the escape of the cranial contents under compression, and avoids, in great measure, the bulging of the head in the diameter at right angles to that compressed, and also the risk of rupturing the scalp, and thus allowing spiculæ of bones to protrude. Even with this precaution it has been shown that the bulging takes place to some extent, but far less than if the precaution be omitted. As the head is generally grasped in the transverse diameter of the pelvis, that most lengthened by compression would be the one corresponding with the antero-posterior of the mother, and which is the one usually shortened in deformity. According to experiments of Hersent, all the diameters except the one included in the blades are lengthened under pressure on an average of about seven-sixteenths of an inch; when the cephalotribe is applied without previous craniotomy, but where the latter had first been performed, although there was still extension, it did not exceed from one-sixteenth to three-sixteenths of an inch.

Authorities differ (and in what do they not differ), as to the extreme limit of contraction of the pelvis rendering the successful application of the cephalotribe impossible. The inventor of the instrument claimed that it might be easily and effi-

ciently applied in cases where the antero-posterior diameter of the upper strait measures more than one inch and eleven sixteenths of one inch. Hersent fixed the extreme limit at two and a half inches, while perhaps the majority of accoucheurs maintain that the operation may be successfully performed with a diameter of two inches, unless the child be very large. Dr. Barnes believed the instrument could be applied and the head crushed with a diameter of one inch and a half.

It should be borne in mind, however, that as we approach the extreme limit of the possibility of cephalotripsy, the operation becomes more and more perilous to the mother, from the difficulty of applying the instrument and the consequent irritation set up in the parts, from repeated unsuccessful attempts. The danger may nearly or quite equal that of the Cæsarean section, without the partially redeeming trait of the possible, sometimes probable, saving of the child. In these extreme cases, therefore, it may be regarded only as a last resort, short of Cæsarean section, having as its brightest prospect the rather uncertain salvation of the mother, but the certain loss of the child.

In the application of the cephalotribe, we should be guided by the same general principles which we have already laid down, when speaking of the use of the obstetric forceps. As in these cases, however, the necessity of the operation arises from pelvic deformity, that very circumstance greatly increases the difficulty of its performance, and that, just in proportion to its extent. It is therefore important the greatest care should be taken in the introduction of the blades. We should carry up the hand as far as possible to guide their course, and to explore the obstructions that may exist, and scrupulously abstain from all undue force or violence. An assistant should always steady the head by pressure over the hypogastric region. As the instrument is heavy and the blades more pointed than those of the obstetric forceps, if they be incautiously propelled, they may easily inflict injury upon the maternal structures. If we fail at once to get the blades into their proper places, so as to lock, we had better withdraw one or both, and make another attempt. Sometimes it is advised to reverse the order of their

introduction—sometimes when the first blade has been easily brought to its place, and the course of the second seems to be obstructed, it is thought best to carry the second up over the first, or rather, along the surface of the same hand that served to guide the first, to be properly adjusted after it is fairly within. It is recommended by some, after the blades are introduced, to push back the handles as far as possible towards the perineum, because it is alleged that in deformed pelves the promontory of the sacrum projects so far towards the os pubis as to push the head forward against the anterior abdominal wall of the mother, so that if this precaution be not used, the vault of the cranium alone will be crushed. In some cases this advice may be good, but is not applicable to all.

Care should be taken to pass the blades as high as possible, so that they may include in their grasp the base of the skull, as it is all important in order to effect delivery that this should be thoroughly compressed.

When the instrument is properly adjusted the next step is to apply the compressing force, whether this be by screw power or otherwise. This force should be very gradually applied, so as not to destroy the integrity of the scalp nor cause spiculæ of bone to project through it. We should be satisfied that the head is completely crushed, and the contents of the cranium as nearly as possible evacuated. Of the former we may form an opinion by the amount of crepitation under the force of the instrument, whether this be heard or felt, and of the latter by the amount of cerebral matter evacuated through the opening previously made in the skull. If we have reason to believe that the head is not completely crushed by the first application of the instrument, we should withdraw and reapply it, being careful to prevent its falling into the groove made by the first compression. An examination should be made with the finger to ascertain whether there are any spiculæ projecting through the opening previously made in the skull, and if so, remove them. If the perforation have been made in the manner we have indicated in the chapter on craniotomy, there is not likely to be any trouble from this source.

When the operation of crushing is completed, unless the de-

formity be very great, and consequently the passage very narrow, we usually apply extractive force. The cephalotribe, as commonly made, on account of the slight curvature of its blades, is not so good a tractor as the obstetric forceps. As before observed it is apt to lose its hold and slip. This occurrence may be ascertained by the sensation imparted to the hand. It may be readjusted and another trial made.

As the head is usually seized in the transverse diameter of the pelvis of the mother, and its diameter therefore more or less elongated in the direction of the antero-posterior of the pelvis, extraction often becomes difficult. To obviate this, it is advised to rotate the instrument, so as to bring the lengthened diameter of the head in accord with the transverse diameter of the pelvis; and when the head is thus brought down into the cavity to rotate again, so as to suit the changed diameters of the pelvis. If, however, simple extraction force be applied with gentle oscillating movement, it is probable, in obedience to the law again and again referred to in this work, the diameters of the head will spontaneously accommodate themselves to those of the pelvis.

When the upper strait is very much narrowed through deformity, the head within the grasp of the instrument cannot be brought down. In such cases, after the crushing is thoroughly completed, it is better to leave the future process to the powers of the womb, provided they be vigorously in action. The head now made soft and yielding, will be gradually moulded to the shape of the abnormal pelvis, and pass the superior strait, either spontaneously or with such gentle aid as the exigencies of the case may demand, and a little ingenuity suggest. If the size of the after coming parts create difficulty, the instrument may, in turn, be applied to them so as to facilitate delivery.

In very difficult cases some authors advise repeated crushing operations, with an interval of several hours between, as less dangerous than prolonged efforts at the same time. In the interval the patient is strengthened by taking appropriate nourishment. I apprehend the danger here would, in many cases be, the hopeless exhaustion of the woman through prolonged suffering. This might perhaps be in some degree

counteracted by the judicious use of chloroform or of morphia, to such extent as to temporarily arrest uterine action and procure sleep—the great objection to the latter would be the probable increase of the risk of severe shock.

M. Pajot, of Paris, details his method of practicing the operation substantially as follows. After thoroughly, but carefully crushing the head, he endeavors to make the reduced diameter thereof to correspond with the contracted diameter of the pelvis, by rotating the instrument to the right or left, as may be most easy, while it still retains the head firmly in its grasp. If he find such rotation difficult to accomplish, he desists from further attempts, and carefully withdraws the instrument without making the least traction. The force of the womb, he finds will usually, and often in an incredibly short time, mould the altered head to suit the passage it has to traverse, at the same time imparting to it the movement of rotation so difficult to effect by means of the instrument.

When necessary, he repeats the operation of crushing, at an interval of two, three or four hours, according to the woman's condition, as determined by the symptoms, allowing two or three introductions of the instrument for each time. It is attempted to support the strength of the patient in the meanwhile with light nourishment. M. Pajot purposely avoids traction upon the head by means of the cephalotribe, and styles his method "*céphalotripsie répétée sans tractions.*"

The foregoing method would, no doubt, in most cases effect delivery, if the patient should live long enough for that purpose; but it is not so certain what would afterwards become of her.

It will be consolatory to know that this horrible and revolting operation is seldom necessary with American women, and especially in practice in rural districts. We do not often meet with a pelvis requiring the head to be reduced in size, in order to effect delivery, unless the cranial bones be unusually ossified or the head of the child abnormally large. Even in such cases the large proportion can be successfully and safely managed by the skillful and dextrous use of craniotomy instruments alone. Cephalotripsy should, therefore, be regarded as a last resort

this side the Cæsarean section, and applied only to those cases in reference to which it may justly be asked: What better can be done?

INDUCTION OF PREMATURE LABOR.

This operation, as the name imports, contemplates the effecting of delivery before the normal close of utero gestation. It is performed in the interest of the mother, of the child or simultaneously of both. It is a procedure of comparatively recent date; and although it is impossible to say with certainty when the first trial of it may have been made, it was not until 1756 that it met with professional approbation. Denman tells us that in that year a congress of the most eminent physicians met in London to discuss its merits, and who sanctioned its legitimacy and utility. From that time it has grown slowly but steadily in professional favor. At the present day, perhaps, no enlightened physician doubts its propriety under circumstances demanding the kind of relief which it, when properly performed, undoubtedly affords.

In general terms, this operation is indicated where the circumstances of the mother or child are such as to expose either or both to imminent risk to life by the continuance of gestation to full term, but which there is a reasonable prospect of averting or greatly diminishing by the induction of premature labor.

But to speak more particularly, it is indicated in cases of pelvic deformity of such degree, as to render impossible the birth of a living child of ordinary size, at term, when such might be born by anticipating, by a few weeks, the normal period of delivery.

To quote from Prof. Thomas: "It is difficult to say what degree of deformity calls for the procedure, but in general terms, it may be stated that wherever it is estimated, or, as is far better, where it is proved that a child at full term cannot be delivered by instrumental or manual means, premature delivery is called for. Still, speaking generally, the normal length of the shortest diameter of the pelvis is four inches;

between this and three inches is the domain of the forceps; between three inches and two and a half, that of version; between two and a half and two, that of craniotomy; and under two inches that of the Cæsarian section. I shall not argue as to the propriety of preferring premature delivery to the terrible risks attendant upon the graver of these procedures, for all will admit it."

Again we may regard as fit subjects for premature delivery those cases wherein obstruction to the birth of a full grown child is created by tumors, such as ovarian growths, cancerous tumors and the like. In some such cases a child after it has reached viability may be safely delivered by premature labor, which would be necessarily sacrificed if allowed to go on to full term; while at the same time the life of the mother might also be sacrificed.

We occasionally meet with cases where the death of the fœtus in former pregnancies has occurred at a given period toward the close of gestation. In such we may resort to the induction of premature labor so as to forestall this accident.* In order to accomplish this, it will be necessary, near the time assigned by the mother as the period of the death of the child on former occasions, to watch carefully its condition as signalled by the usual signs of approaching dissolution, such as violent and uneasy movements, weakening of the heart's action, etc. When we notice these prognostications, if the child be of viable age, it will generally be best to propose premature delivery. If the pregnancy, however, has not advanced so far as to afford reasonable hope of saving the life of the child, it is perhaps scarcely necessary to interfere. There will sometimes be considerable difficulty in determining this matter. In order to fix as nearly as possible the exact point in the progress of utero-gestation, Dr. Barnes advises us to "reckon the pregnancy from the day after the last cessation of the menstrual period, the most probable time of conception." There are cases, however, where conception has taken place in the absence of the usual catamenial manifestations, and here we have no

* See "Disorders of Pregnancy."

other aid to a correct conclusion but the unreliable one afforded by the time of quickening.

As to the viability of the child, Prof. Thomas asserts: "Little hope should be entertained if the delivery be brought on at, or just after the seventh month; almost none should be indulged in before the seventh month, while a child delivered at or after the eighth month, provided its vital forces have not been depreciated by the abnormal state which has necessitated delivery, has, with proper management, almost as good a prospect of life as one arrived at full term."

"The end of the eighth month, i. e. the ninth menstrual epoch, is the most favorable time for the induction of premature labor."

This operation is moreover indicated when the pregnant woman has become the subject of some disease inherent in her condition, which if unrelieved seriously threatens her life, as well as that of the fœtus, if utero-gestation be permitted to proceed to term, and which all known remedial measures have been unavailing to arrest. Another condition is that there be reasonable ground of hope that the timely induction of premature labor may save the life of mother or child or of both. In this class are included cases of excessive and intractable vomiting, causing extreme prostration and emaciation, aggravated uræmia, etc. The number of such cases I humbly trust will be greatly diminished under homœopathic treatment, as our mild specific remedies will be found to reach many of them which have heretofore been abandoned by the old school as irremediable by medicinal agents.

There is in the children of some women a tendency to extreme ossification of the cranium before birth. Such cases at full term, unless the pelvis be very roomy, or the head very small, necessitate delivery by craniotomy, and of course the loss of fœtal life, or Cæsarean section, exposing the mother to imminent peril. By anticipating natural labor by two or three weeks, it is believed the child in such cases may usually be saved, while the mother herself is exposed to less risk than she is in delivery at term.

Finally, there are cases of placenta prævia, where the hæm-

orrhage sets in early, several weeks before the normal close of utero-gestation, is at times violent, or persistent as a constant drain, reducing the strength of the patient to such an extent as to render it extremely doubtful as to her safety, if premature delivery be not effected. Here not only is the life of the mother seriously imperilled, but scarcely less that of the child. By the induction of labor before the mother's strength is hopelessly prostrated, or the child rendered feeble and anæmic by the loss of its accustomed supply, both may perhaps be saved.

As the induction of premature labor is an operation of great responsibility, it should never be undertaken without the most serious and conscientious consideration. Under no circumstances is it without risk, and sometimes it may be said to be very hazardous. In most cases, however, where circumstances are favorable, when resorted to in time, and properly performed, it may be regarded as scarcely attended with more danger than natural labor. We should always previously inform the patient of its nature, design, and probable advantages, and at the same time not conceal from her what we may suppose, in her particular case, to be its risks. If at all practicable, we should have our decision sustained by the opinion and approbation of at least one professional friend of good reputation.

The methods employed for the induction of premature delivery have been and still are very varied. While different cases may require different modes of management, the selection of the best, the most efficient and safest means is of the utmost importance.

Certain medicinal agents taken into the circulation and through it, acting upon the nerves, controlling the functions of the womb, are capable of bringing on contractions of that organ and effecting the expulsion of its contents. Such is the *Secale cornutum*, or Ergot of rye. This has been used for the purpose under discussion, and effectively, but given in the large doses customary, where uterine contractions are produced, they are usually so violent and unremitting as to endanger rupture of the womb, or the death of the child or both. It is to be remembered that at the time when it is sought to effect premature delivery, the organs are in a state of unpreparedness, the

os uteri undilated and undilatable, and hence not disposed to respond in a kindly way to the force pressing the presenting part violently upon it. Ergot has therefore been abandoned, on account of its violent action, and the dangers to mother and child arising therefrom. I am not certain that it might not be available, given in small and oft repeated doses, as I have elsewhere advised for other purposes, while at the same time *Actæa racemosa* might be given in alternation with it, which would serve to relax the structures, and in some measure obviate the difficulties arising from their rigidity. This is, however, only a suggestion; I have no personal experience in such a mode of treatment, nor have I seen any case reported as thus treated.

Puncturing the membranes, so as gradually to drain off the liquor amnii, will, in most cases, sooner or later bring on labor pains. This method is however considered dangerous to the child, as when the waters are evacuated the womb contracts forcibly upon it, and being usually more feeble than at full term, it is more liable to injury. We lose, moreover, the advantage of the wedge power furnished by the bag of waters in dilating the os uteri, and this remaining undilated, is another source of danger to the child and suffering to the mother.

In effecting premature delivery, the more nearly we can imitate natural labor, the more satisfactorily and safely we will accomplish our object. What then takes place in natural labor, and in what order of sequence? First, the os uteri gradually relaxes, then labor pains set in, the bag of waters is formed, protrudes through the os, and by its distending power, aided by other forces, accomplishes complete dilatation, the membranes rupture, the presenting part enters the upper strait, descends through the pelvis, and the child is born.

Now to imitate this process, in the first place let us effect partial dilatation of the os uteri. This may be done by introducing a laminaria tent. Possibly a tent made in suitable form, of dried slippery elm bark, might be safer, and act as well. To bring on labor pains, we push up a gum elastic catheter, with the usual wire stilet within, to be withdrawn when the catheter is in place. Instead of the catheter we may use a

gum elastic bougie, which is, perhaps, preferable. It should be very gently pushed up several inches *between* the uterus and the membranes, very *carefully* avoiding the rupture of the latter, and also keeping clear of the site of the placenta. The bougie should be left in this situation for several hours, if necessary, till labor pains come on. In the meanwhile we may go on with the dilatation of the os by the introduction and expansion of Barnes' dilators, of which we have elsewhere spoken. When the os is fairly dilated, if necessary, we may give small, repeated doses of Ergot, and in due time rupture the membranes. This latter measure should be resorted to for bringing on the pains, if the introduction of the bougie do not. The conduct of the labor thenceforward is the same as if at full term.

We have already spoken of the viability of the child. As to the time we should select for the operation, when circumstances admit of choice, one general remark may be made. We should always allow the child to attain to as great an age as is consistent with the particular object we have in view. The nearer the natural close of utero-gestation it can be safely delivered, the greater is its chance for continued life.

Infants prematurely born require especial care. Dr. Thomas advises them to be kept in an atmosphere of 95° Fah., until they are capable of generating the amount of heat necessary to sustain life. When other means of maintaining warmth are not at hand, bottles containing warm water should be laid around them. They should be carefully fed upon diluted milk, or, better still, that drawn from the breast of a healthy wet-nurse, till the mother herself is prepared to suckle them.

CÆSAREAN SECTION.

This operation has for its object the extraction of the child through an incision artificially made, in the abdominal and uterine wall of the mother. It takes its name from Claudius Cæsar and Julius Cæsar, both of whom, according to tradition, were delivered in this way—the evidence of its truth, however, is now somewhat misty. The fatality of this operation to the

mother is, up to the present time, very great, viz.: according to statistics collected by Dr. Clay, of Manchester, about 1 to $2\frac{1}{3}$. It therefore should be regarded only as a last resort, where the mother is living.

The circumstances under which the Cæsarean section becomes a legitimate operation are very few. It may, in the first place, be had recourse to, when a woman far advanced in pregnancy, from any cause dies suddenly, there being reason to believe that the child within her womb is still alive; or, even if she die by the slower process of disease, when there is a reasonable hope of saving the child by the operation. This, however, in the latter case, is probably seldom accomplished, as the time consumed in procuring the attendance of the operator, will be generally fatal to the life of the child, even if that be not extinct at the moment of the mother's death. Even though the surgeon should be present, the friends of the woman must be sufficiently assured of her death, before any attempt is made to operate, and this delay would perhaps usually be sufficient to defeat the purpose. The objection to turning in these cases is the undilated condition of the passages, except where the patient expired in the act of parturition.

In case of the living woman, the operation is justifiable only in such circumstances where delivery cannot be effected by any other means, without subjecting the patient to equal or greater risks than those known to appertain to the Cæsarean section. I hold the mother should never be exposed to great risks simply to save the life of the child, at least unless she, in the full possession of her reason, so elect.

The mortality attendant upon the Cæsarean section is probably greatly increased by the circumstances under which it is usually performed. From the extreme abhorrence which every one, unless perhaps a special operator, must feel towards the operation, it is likely to be postponed to the latest moment, and until the patient is exhausted by the agonies of a fruitless labor, and therefore in a condition unfit to endure a severe operation of any kind. Hence it is advised, where it is known beforehand, that a necessity for such an operation exists, to perform it before the advent of labor. This advice is undoubtedly

rational, but would, in many cases, be exceedingly difficult to follow. If delayed till labor sets in, and it be fully determined that it is absolutely necessary, as giving the mother and the child the only chance for life, the sooner it is resorted to the better for both. Dr. Clay tells us that "the operation is justifiable with an antero-posterior diameter of an inch and a half and three inches transverse, or under, or almost perfect obliteration of the passage by osseous growths."

As preliminaries to the operation the bowels should be well evacuated by the most gentle means, avoiding all drastic purgation. Inspissated ox gall is highly spoken of, as not only clearing out the bowels effectually, but removing flatulency. The urine should be fully evacuated, either by the natural efforts of the patient or by the gum elastic catheter. The position of the placenta should be carefully ascertained, so as to avoid its site, if possible, in making the incision in the womb. The temperature of the apartment should be raised to 75° F. and maintained at that during the operation, having the air also moistened by the evaporation of water. It is hardly necessary to say the patient should be fully anæsthetized before the operation is commenced. To this, however, some object, on account of the liability to vomiting, which, under proper management, is not likely to occur.

The incision should be made as nearly as possible in the linea alba, so as to avoid wounding the epigastric arteries, and thereby causing hæmorrhage. It should commence a little above the umbilicus and be carried a few inches below, cutting around and not through the umbilicus. The skin and muscular fibres are carefully cut through, until the peritoneum is reached, which is known by its peculiar shining appearance. A small opening is made in this membrane, which may be done by pinching up a portion of it with forceps or by a very cautious stroke with the point of the scalpel. It is then divided to the length of the incision in the external layers, by means of a director, or inserting the fingers of the left hand underneath, to elevate it, and serve as a guide to the probe pointed bistoury employed in severing it. An assistant then, with one hand on each side of the incision, pushes for-

ward the womb, in which an incision is made, corresponding in situation and length with that in the abdominal walls, avoiding the fundal region and the placenta, if possible. When the incision is made into the womb, the assistant should insert a finger into each end of the wound, and thus draw up the organ tightly against the abdominal walls, so as to prevent blood and the liquor amnii from escaping into the abdominal or peritoneal cavity. The membranes are then punctured and divided, and the child is carefully removed, the head and shoulders, if practicable, being delivered first. The placenta and membranes are then extracted and the womb left to contract as speedily as possible. If it do not contract spontaneously, gentle pressure is applied. It should be ascertained, by digital examination per vaginam or by passing up a catheter, that the os is patulous, so that the lochia may escape. It is not agreed whether it is better to close the uterine wound by sutures or leave that to be effected by its own contractile powers. Probably it had better be secured by animal sutures, such as carbolized cat-gut, cut short, or silver wire. The objection to the former is their liability to open prematurely when continuously exposed to moisture. If silver wire be used, after twisting, the points should be so bent as not to irritate the tissues with which they may come in contact. Spencer Wells used a continuous silk thread, one end of which he brought out through the os and vagina, so as to permit its removal. It is advised not to close the abdominal wound until the risk of hæmorrhage is past. All blood and discharges should first be removed, by means of moist warm sponges, from among the abdominal viscera. This precaution cannot be too scrupulously attended to, as, if it be neglected, these matters necessarily become putrid, and almost certainly create septicæmia.

The edges of the abdominal wound are carefully approximated and secured by pins or silver wires passed deeply through the tissues; some say, including the peritoneum itself. These pins or sutures are inserted about an inch apart, beginning above and passing downward. As to including the peritoneum, there is a difference of opinion. Dr. John L. Atlee,

in his ovariectomy cases, does not include that membrane. The idea that approximation of its edges is effected by including it in the sutures, is probably fallacious; for the edges of so thin a membrane are not likely, by the operation, to be brought into close juxtaposition through any considerable portion of their extent. Then, on the other hand, the pressure of the pins or wire would be likely to produce irritation, and, perhaps, light up inflammation.

When the wound is closed, it is covered with folded lint, which is secured by adhesive straps and a suitable bandage, prevented from slipping up, by attachments passed around the thigh. The bladder should be relieved, as often as necessary, with the catheter, and the bowels kept perfectly at rest. Arnica, in water, should be given as after labor, alternated with Ars. a.³, and continued. All the symptoms that may arise, should have their appropriate remedy. The diet should be of the lightest possible character. In case of great prostration, beef tea or essence of meat may be given, in quantities, however, strictly regulated by the exigencies of the case.

Dr. Robert P. Harris, member of the Philadelphia Obstetrical Society, etc., has lately published (*American Journal of the Medical Sciences*, for April, 1878,) an interesting article upon the Operation of Gastro-Hysterotomy, "viewed in the light of American experience and success." He has collected seventy-two cases, of the operation performed in America, which he gives in more or less in detail. The conclusions, at which he arrives, are the following: That the success of American surgeons has heretofore been greater than that of the European, especially than that of the surgeons of Great Britain. The failure in the latter country he attributes rather to the faulty habits of the women than to any want of dexterity or skill on the part of the surgeons themselves. The beer drinking propensity of the people he thinks an important factor in the ill-success.

The doctor very rationally insists upon early operation, where it is found to be necessary, and, when thus performed, believes it more conducive to the safety of the mother, in cases of extreme contraction of the pelvis, than craniotomy or embryulcia, supposing these to be at all practicable.

The statistics of Dr. Harris seem to favor the employment of sutures in closing the uterine wound. He collected twelve cases in which they have been used, with five recoveries; whereas the general result of his observations is, thirty-five saved and thirty-seven lost.

CHAPTER XII.

ANÆSTHESIA IN LABOR.

As frequent reference is made in this work to the use of anæsthetics in the conduct of labor, it may be proper to devote a chapter specially to this subject. Here, however, it will be our object, not so much to direct attention to the indications which, in our opinion, call for their employment, as to answer some of the objections preferred against their use, in any circumstances whatever, and then indicate the method by which they may be most safely and efficiently administered. I have already, and elsewhere, pointed out the indications demanding their employment. Let me, moreover, premise, that my remarks, unless otherwise distinctly stated, are intended to apply to Chloroform, the only agent worthy the entire confidence of the obstetric practitioner. Ether, so much lauded in surgery (especially when largely mixed with chloroform), scarcely deserves a moment's consideration here.

I do not advocate the *indiscriminate* employment of anæsthetics in labor. Where it is natural, the patient courageous and strong, where she suffers no unusual amount of pain, and where, moreover, no special indications are present, it would be a sakeless procedure to administer chloroform or any other anæsthetic. Such patients would usually object to it themselves. But, on the contrary, where there is *intense suffering*, from any cause whatever, and where insensibility or a relaxed

condition of the tissues is desirable, this agent comes into play, and usually fully meets the expectations of both patient and attendant.

One of the most urgent objections brought against the use of chloroform, in labor, has been its supposed immediate danger. This objection, of course, falls to the ground, when it is shown that no such danger exists, or, if it exist at all, it is in such a trifling degree that it does not deserve to be taken into the account. I apprehend that the supposed danger of chloroform, in surgery and midwifery, are different and very distinct questions. That accidents do not unfrequently happen in surgical practice, from the use of chloroform, cannot be denied. While the patient is being anæsthetized, preparatory to a surgical operation, he is mostly under the influence of fear, very frequently, intensely so. We all know the depressing power of this emotion—how it lowers and unsteadies the action of the heart. It therefore lays the foundation for the worst effects of chloroform, namely, paralysis of that organ. We will say nothing of the reckless and unscientific manner in which the chloroform is often administered by a young assistant. On the other hand, when chloroform is used in labor, there is usually no such depressing antecedent emotion. The patient, on the contrary, begins the inhalation under the inspiring influence of hope. She is told by her attendant, in whom she has confidence, and truly so, that she may not only expect immunity from danger, but a speedy suspension of all her sufferings. Under this favorable moral condition she commences inhalation. The frequent recurrence of the antidotal pain, or contraction of the womb, is, probably, also an element of safety. At each effort of this organ the energies of the whole system are aroused afresh, and this circumstance prevents the patient from sinking into so deep a state of narcotism as to seriously endanger life. The organism, too, has accumulated a store of energy, to fit it for the function of parturition, which enables it to resist the power of any lethal agent tending to cause death by arrest of circulation or the paralyzing of the nervous power. At the recurrence, moreover, of each successive pain, an additional amount of blood is thrown upon the brain, thus

supplying the deficiency which might ensue from partial paralysis of the heart.

But the strongest proof of immunity from any serious immediate danger, is the incontestable fact, that accidents rarely happen to patients in labor under the influence of chloroform. We have for many years, read the details of casualties from this agent, as given in our Journals, and we can remember but *one* related, as having occurred to a parturient patient. This was a case that is said to have happened in the city of New York. The patient had been suffering from a severe cold upon the chest—was under the influence of chloroform but half an hour until her child was born. She waked up considerably oppressed in her breathing, owing, probably, to her cough and expectoration being held in check by the anæsthetic. The doctor administered an opiate, doubtless tending to deepen the narcotism, and still longer to suspend the needed cough. At his visit next morning he found her still more oppressed in her breathing, and administered a dose of tartar emetic, shortly after which she died. Comment is unnecessary.

But, then again, some, not so certain of immediate danger, point to that more remote. Though the patient may, for the time, escape the peril with her life, yet “vengeance suffereth not to live.” She is doomed to the consequences of a wrecked nervous system and broken down health throughout the remainder of her earthly pilgrimage. We conceive this also to be a false alarm. We ourselves have seen nothing of it. I have made it my business to call upon almost every woman to whom I have given chloroform during labor, and to inquire minutely into the condition of her health, and the result has been that I have found the recovery of these as complete, to say the very least, and their health as good as in the same number of cases to whom no chloroform had been given at all. I know it is customary, where an anæsthetic has been administered, to attribute whatever follows, from whatever cause, to that influence alone. A writer in one of our Journals met with quite a number of cases of prolapsus uteri, all the subjects of which had taken chloroform in labor, and to this cause the accidents were referred. On the other hand, I

meet with very few such cases, although I often use chloroform. My colleague's cases may, therefore, most probably, be attributable to some other and very different cause. It should be remembered, moreover, that it is principally in the most perilous labors the anæsthetic is used.

Again we are told that chloroform often gives rise to post partum hæmorrhage. That it never constitutes a factor in the production of that accident, would be as hard to deny, as it undoubtedly is, upon sufficient evidence, to affirm that it does. The only way in which I can conceive that it would contribute to this result, is by its general relaxing power. If, however, we make our deductions from observation, rather than from theory, we shall, I think, arrive at a very different conclusion. While the relaxing effect of chloroform upon the os can hardly be doubted, I do not think there is any evidence that it, at least in the vast majority of cases, interferes with the contractile power of the muscular fibres of the body of the womb. I think I as frequently find that organ firmly contracted after the expulsion of its contents, where chloroform has been given, as where it has not. I do not remember to have met with any case of severe flooding after its administration. On the contrary, the worst cases of hæmorrhage that have occurred to me, and they have been but few, were those in which no anæsthetic had been used at all. But if we have any fears upon this subject, hæmorrhage may be anticipated and prevented by administering Ergot before the birth of the child, which will pretty certainly secure contraction after the womb is emptied of its contents. This recommendation may be considered as not homœopathic. I am not altogether certain whether it is or is not. But I do know it is consistent with common sense. By the physiological action of Ergot we procure the contraction of the tissues of the womb, and thereby the closure of the open mouths of the vessels. Or, if you prefer the theory that flooding arises from congestion of the small vessels of the walls of the uterus, then contraction should relieve congestion, by forcing back the blood, and, consequently, while it lasts, secure against hæmorrhage by diapedesis.

It is further objected by some that chloroform retards labor, and sometimes necessitates the use of the forceps. Let it be granted that it may in some few instances postpone delivery, it at the same time removes suffering, and the patient is unconscious of the lapse of time. "*Beati non numerant horas.*" The only inconvenience this is likely to cause, is merely to tax the patience of the attendant. Should the delay endanger the child, the forceps may be used, and as for the mother, as she is relieved from suffering, she is not so likely to become exhausted. The truth, however, is, as verified by abundant experience, that chloroform in very few cases indeed retards labor at all. This is the true deduction from observation, the opposite rests, for the most part, upon theory. By relaxing the tissues and promoting an abundant secretion of mucus to lubricate the surfaces, as well as by blunting sensibility, and modifying reflex action, so that the will makes no effort to suppress the efforts of the womb, labor is, in most instances, accelerated not retarded, by the administration of chloroform. The assertion that it prevents the accessory muscles, as the abdominal, being called in to aid the womb, is by no means sustained by accurate observation.

As regards the objection based upon the questionable morality of the use of anæsthetics, it scarcely merits notice, for it may be brought with almost equal force against any means whatever, employed for the relief of human suffering.

Finally, the objectors to the use of chloroform in labor are found principally amongst two classes of persons: doctors, who are unwilling to take the pains to become experts in its use, or who under-estimate the importance of their patient's sufferings; and the anility, who, now exempt from the pains of child bearing themselves, can see no good reason why the younger women should be saved from what they once suffered.

There can be little doubt but that the safety and efficiency of chloroform in labor, as well as for other purposes, depends much upon the manner in which it is given. A very common practice now is, to fold a napkin in the form of a hollow cone, the smaller end representing a truncated apex. This cone is inverted in the hand, and an indefinite quantity of chloroform

thrown at random into the larger opening of the base, to light somewhere upon the inner surface. The larger end is then applied over the nose of the patient, and we are told that the smaller opening admits sufficient air—more than can pass through the glottis. Perhaps it may, but who can say what percentage of the vapor of chloroform it may contain when inhaled into the lungs. The fluid when thrown in may lodge principally upon the surface nearest the mouth and nose of the patient when the napkin is applied, and the warmth of the hand grasping it may hasten evaporation, so that the air when inhaled may contain a dangerous proportion of vapor.

A safer and more manageable method of administering chloroform is the following: A clean, linen handkerchief, free as possible from starch, is folded in the usual manner, until about as large in surface as the palm of the hand. This is laid upon the palmar surface of the left hand, while a four ounce vial, filled with chloroform, and having a pretty wide mouth, is held in the right. The folded handkerchief, by a suitable movement of the left hand, is brought over the open mouth of the vial, when the latter, by a quick tilting movement, is made to impart a small quantity of chloroform to be absorbed in the folds of the former. The handkerchief is then quickly brought within an inch of the patient's nose, the moistened portion being opposite the nostrils. She is then requested to dismiss all apprehension, to breath quietly and to resign herself wholly to the influence of the anæsthetic. As the chloroform evaporates, as it rapidly does, another and another portion is successively applied as before directed, and the inhalation continued until its effects are fully perceptible upon the patient. The handkerchief may soon be brought nearer, but I never approximate it closer than to rest upon the end of the patient's nose. When the inhalation has been continued for a few minutes, she will often begin to snore, and then the handkerchief had better be withdrawn for the time. When the next contraction of the womb takes place, the patient usually moans and manifests other signs of suffering, although if afterwards interrogated it would often seem that she had been at the same time insensible. When we apprehend that she still really suffers upon the

recurrence of pain, the chloroform should again be quickly applied, to be withdrawn when the contraction ceases. We should endeavor all the while carefully and accurately to estimate the degree of anæsthesia produced, and not to push it further than simply to secure insensibility to pain, at least in the earlier stages of labor. Toward the close, if there be apprehension of much suffering, a profounder impression may be made. The nose and lips should be smeared with thick sweet cream, to prevent the irritating effects of the chloroform.

If it be asked at what stage, if chloroform be at all used, its inhalation should be commenced, I would say that it is usually better to begin before the sufferings become intense. When they have risen to an extreme height, it is difficult afterwards to produce complete insensibility, or at least that beautiful tranquility which it is generally possible to secure. The woman is apt to carry with her the remembrance of her previous agony, as a troubled dream, throughout the whole future course of her labor. She will speak of her sufferings while under the influence of the chloroform, although she may seem to have forgotten them after she is fully awake. On the other hand, I never begin the use of chloroform, if I can help it, till the bearing down or expulsive pains set in.

Again, if it be asked how long a woman may with safety be kept in a state of pretty profound anæsthesia, I would reply that this will somewhat depend upon circumstances. I remember having kept one patient in a state of insensibility a little over ten hours continuously. This woman, a primipara, and of delicate scrofulous constitution, had had a rather severe attack of cholera morbus just prior to her confinement, brought on by imprudently eating of green corn. This attack had greatly weakened her general powers, and her labor was consequently modified thereby. She had some flooding an hour or two after delivery, apparently brought on by an attempt to raise her to pass water. The hæmorrhage was not alarming, and readily yielded to my efforts to suppress it, for I had not yet left the house. She made as good a recovery as could be expected from the circumstances of her labor, leaving chloroform altogether out of the question. This lady removed from

the neighborhood before she again became pregnant, but has since given birth to at least one child. She now resides in Missouri, and I have quite lately heard of her having had the singular misfortune to suffer an abortion on board a railway car, in travelling eastward. I have frequently inquired about her health, and have always been told it was as good as usual with persons of like constitution. I have said thus much of this patient, because in her case I would have apprehended unpleasant after-consequences, rather than in any in which I remember to have used chloroform.

When delivery is accomplished, or the operation concluded for which the anæsthetic has been used, the patient will sometimes still continue in a comatose condition more or less profound. We need feel no uneasiness about this, provided the breathing be good, and the pulse regular and of sufficient force. It is probably better to allow her gradually to return to consciousness, than to suddenly awake her. Where the narcotism has not been very profound, or if the patient be of a wakeful, anxious disposition, she will generally be aroused by the crying of the child. When she continues to sleep, we should very carefully attend to the condition of the womb; be careful to see, or rather feel, that it has fully contracted and that it maintains its contraction. If there seem to be a disposition in the organ to become relaxed, or if we have not been able to secure proper contraction, we should be on the alert to guard against hæmorrhage. When chloroform is administered, it is an excellent precaution, above referred to, to give occasionally toward the close of labor, very moderate doses of Ergot, which usually ensures contraction, and is an excellent preventive of severe after pains. In recommending this practice I am not to be understood as admitting what I have already denied, that there is more risk of hæmorrhage when chloroform is administered, than when it is not.

When it is for any reason desirable to arouse the patient sooner than she will awake when left to herself, we may call her by name in a tone of voice pretty loud, but not harsh or such as to startle her. If this be not sufficient, we may sprinkle a little cold water upon her face. The first of these expedients is generally sufficient, and the latter I have never seen fail.

I have fortunately never had occasion to resort to any of the means advised, to arouse the patient from apparent death. Here they would perhaps be alike unavailing. Of those readily accessible I would rely most upon flagellation upon the bare skin, with a wet towel, having first taken care to draw the tongue forward, so as not to obstruct the entrance of air into the trachea. If breathing had ceased, I would resort to some of the means of artificial respiration, with which the young practitioner should familiarize himself, as found usually in the books on the treatment of asphyxia. It has been recommended to introduce air into the lungs by means of a syringe and catheter passed through the glottis. Nelaton, in cases of apparent death from chloroform, inverts the patient, suspending her by the feet, while the head hangs downward.

When the woman has been for a considerable time under the influence of chloroform during labor, as we have elsewhere remarked, the child frequently does not cry immediately when born. This need cause no alarm. The mucus should first be removed from the upper part of the throat and mouth with the finger. If it do not then cry it may be moderately slapped with the palmar surface of the hand or fingers. If this do not succeed, a little cold water may be sprinkled upon its body from the ends of the fingers, or the body immersed in water as warm as can be safely borne, and then cold sprinkling applied. One or other of these expedients will always succeed if its stillness depend only upon narcotism through the blood derived from the mother.

Finally, we should be exceedingly careful that the chloroform we use be of an undoubtedly good quality. To ensure this we should never purchase an article because it is cheap, nor should we use any unless we know pretty well through whose hands it has come, and it should always bear the name of a manufacturer whose reputation is a sufficient guarantee for its excellence. While in our possession we should keep it well corked, so as to exclude the air, and always set away in a *dark place*.

Recently, hydrate of chloral has been used to produce insensibility to suffering in labor. It is claimed for this agent that it may be given earlier than is generally thought proper to use

chloroform, without at all retarding the process. It is, moreover, said to be very efficient in producing relaxation of the os uteri, when any difficulty arises from its rigidity. Dr. Playfair, in his late work, speaks very favorably of chloral, and advises to give it in doses of fifteen grains every twenty minutes, till three doses have been taken. If its effects are not satisfactorily apparent after taking the third dose, he gives, at the expiration of an hour, a fourth, but this, he says, will rarely be found necessary.

I have, up to this time of writing, tried the chloral only in a single case. This was one which I thought well suited to such a trial. I gave it when the preparatory pains became annoying, and before the dilatation of the os, in doses and at the intervals advised by Dr. Playfair, until forty-five grains had been given. I ruptured the membranes artificially, and as the head descended and the pains seemed still to cause much suffering, I resorted to chloroform, of which less seemed to be required to produce insensibility, than if the chloral had not previously been given. The chloral, I think, diminished the suffering, but did not entirely suppress it. There seemed to be no interference with the action of the womb. If I may pass an opinion from so small an experience, I would say that chloral is, upon the whole, far inferior to chloroform. The patient, however, to whom I here refer, the mother of several children, and whom I attended now for the first time, was greatly pleased with the result—said “she had never had so good a time,” and she made an excellent recovery.

We occasionally meet with patients, especially primiparæ, who, when the pains set in with severity, become so restless, that it is very difficult to keep the handkerchief applied sufficiently near the mouth, or they begin to scream whenever they feel the pain approach, so as not to inhale the chloroform, indeed, blow it all away. In such cases, I think the Hydrate of chloral may do excellent service. I would give it early, after the plan of Dr. Playfair, until its full effects were secured, until there appeared considerable drowsiness and at least partial insensibility to pain. If necessary, I would then resort to chloroform. We doubtless would find the patient inhale much

better, and a comparatively small quantity of the latter anæsthetic produce the desired effect.

This method would probably answer well in the few cases occasionally met with, in which chloroform seems to exert but little anæsthetic power, to do but little to deaden sensibility to pain.

If in such cases as those just referred to, deep anæsthesia were desirable, on account of a severe intended operation, the desired end might be reached by giving Morphia some time before the chloroform is administered, should the chloral not answer the purpose.

I have for many years used chloroform freely in cases of difficult and painful labor. Of the many advantages which I believe it possesses, I consider the following as by no means the least. Every practitioner will meet with cases, especially among primiparous women, wherein great anxiety and even alarm is manifested by the patient. This is usually more or less participated by her surrounding friends, especially the mother, if she be present. The consequence often is, the attendant is entreated to do something for the relief of the sufferer, and if he be a young practitioner, or lacking in firmness or self-reliance, he is sometimes tempted to interfere prematurely and incur the consequences of "meddlesome midwifery." Chloroform quiets the patient, and consequently stops the mouths and dries up the tears of her sympathizing friends. The labor progresses, perhaps slowly, but without improper interference, until it terminates spontaneously, or the opportune moment arrives for the legitimate interference of art.

Since writing the foregoing portions of this chapter, I resorted to the following expedient in a single case, with the results of which I was much pleased. The patient was a lady of very nervous temperament, had several times been prematurely delivered of dead fœtuses, mostly, I think, more or less putrid. In the last of these accidents I had attended her, and conditionally promised her a better result should she become pregnant again. I had carefully treated her during this last pregnancy, and, of course, felt deep anxiety for a satisfactory termination. As I had nine miles to go when summoned, the

labor was somewhat advanced when I arrived—the head fairly entering the upper strait, the pains strong and her suffering severe, with much nervous jactitation. I immediately gave her about fifteen grains of hydrate of chloral, and very shortly began cautiously to administer chloroform by inhalation. She readily passed under its influence, the action of the womb kept up undiminished, and in about an hour she gave birth to a fully developed vigorous boy, which cried lustily as soon as released. The patient told me she had no suffering after inhaling the chloroform, and made an excellent recovery.

In some cases of labor the so-called “preparatory pains” are exceedingly severe, causing great suffering to the patient, and, especially in the case of primiparæ, great discouragement. To this state of things Dr. Playfair has thought the hydrate of chloral specially suited. If, however, this extreme suffering be owing, as it possibly may be, to a hyperæsthesia or other abnormal condition of the sympathetic nerves controlling uterine function, a theory, I believe, held by M. Beau, there is another class of remedies which may prove advantageous, some or all of which are certainly worthy of trial. I have elsewhere spoken of the arsenite of copper, an excellent agent in the treatment of neuroses of the sympathetic. I once gave it to a patient during her precursory pains, who, not knowing my intention, expressed herself relieved. Then we have several remedies which have proved so useful in our hands in the treatment of dysmenorrhœa of a neuralgic or rheumatic character. All these are worth trial, although I am as yet unable to vouch for their efficacy from any experience of my own. I would especially recommend for trial, *Viburnum opulus*, *Viburnum prunifolium* and *Xanthoxylum fraxineum*. We have already advised these to be given in case of severe pains in the uterine region, prior to labor, a condition, which, if unrelieved, we believe we have often seen followed by intense suffering in the first stage.

SYNOPSIS OF THERAPEUTICS.

- Abdominal pains during pregnancy: Cup., Ars., Morphia, Acet.
Abortion, threatened, to prevent: Arn., Bell., Ipecac., *Sab.*,
Sec. cor., *Viburnum opulus*; *Viburnum prunifolium*; when
habitually occurring at the same period, chloride of gold
and Sodium.
- Abscess in lips of cervix uteri: Calc., Hepar sul., Lachesis,
Merc., Phos., Sil., Sulphur.
- Agalactia: Calc., Caus., electricity, Rhus.—Acon., Bell., Bry.,
Cham., Merc.
- Albuminaria during pregnancy: Apis, Ars. alb., Equisetum
h., Merc. cor., Phos.
- Anorexia during pregnancy: Ars., Ant. crud., Calc. car., Nux
vom., Puls., Sul., Ver. alb.
- Anteversion of the uterus during pregnancy: Replace and en-
join supine posture till uterus rises above the pelvis.
- Apoplexy of new-born children: Cut and suffer the cord to
bleed.
- Ascites during pregnancy: Apis, Ars., Digitaline.
- Asthma during labor: Ars., Etherial tincture of Lobelia in-
flata by inhalation; drop doses of the alcoholic tincture.
- Bladder, paralysis of, after labor: Tincture Sec. cor., 10 drops
every thirty minutes.
- Constipation after delivery: Bry., Nux, Sul.; enemata of warm
water.
- Convulsions, puerperal: Acon., Actæa, Arg. nit., Arnica, Ars.,
Bell., Bry., Cham., *Gels.*, Hyosc., Opium, Stram., *Verat. vir.*,
Zinc.; *chloroform* by inhalation and injection: Coffea,
Cup.
- Cramps, local: Cup. met., Iguat., Val., Zinc.; in the lower
limbs: *Viburnum opulus*, *Viburnum prunifolium*.
- Eclampsia during pregnancy: Bell., *Gels.*, Opium.

Galactorrhœa: Iodide of Potassium.

Giddiness during pregnancy: Bell., Merc. viv.

Hæmatemesis during labor: Acid nit., Ham. virg., Terebinth.

Hemicrania during pregnancy: Acon., Chin., Col., Ignat., Spig.

Hemiplegia during pregnancy: Bell., Caus., Cocc., Ignat., Nux vom., Sepia.

Hæmorrhage, uterine, during pregnancy: Apoc. can., Erig. can., Trill. pend.

Hæmorrhoids during pregnancy: *Aesculus hip.*, *Aloes*, *Collinsonia can.*, *Nux vom.*, *Sul.*

Hæmoptysis during labor: Ham. v.

Icterus during pregnancy: Phos.

Insanity during pregnancy: *Actæa racemosa*.

Leipothymia during pregnancy: Acon., Carb. veg., Cham., Hepar sul., Moschus, *Nux vom.*

Leucorrhœa during pregnancy: Ergot., Helonias, Hydrastis, Iod. ars., phosphate of lime.

Lochia too scanty: Acon.; if colic, diarrhœa or toothache set in, Cham.; if tympanitic, Col.; too long continued and bloody, *Nux mos.*, 1st dec.

Milk fever, to prevent: Arn.; if it occur, Acon.

Neuralgia during pregnancy: Acon., Ars., Bell., Gels., *Nux vom.*, Puls.

Nipples excoriated: Hydrastia in glycerine, externally; cracked or chapped, Nitrate of Silver.

Œdema of labia externa: Apis.

Paralysis during pregnancy: Ignat., *Nux v.*, Plumbum.

Paralysis, facial: Caus., Graph., Opium, Plumb.

Pityriasis during pregnancy: Alum., Ars., Bry., Lyc., Phos., Sep.

Plethora during pregnancy: Bell., *Graphites*.

Pruritus of the vulvæ during pregnancy: Sepia. Apply externally a solution of sulphite of soda, solution of borax or a *very* weak solution of corrosive sublimate.

Ptyalism during pregnancy; Kreasote, Merc.

Pyrosis during pregnancy: Calc. carb., Caps., Caus., Carb. an., *Nux v.*, Puls., Sepia.

Retention of urine after labor: Sec. cor.; this failing, use catheter.

Rheumatism or neuralgia of uterus during pregnancy: Caul., Viburnum, Xanthoxylum fraxineum.

Secondary hæmorrhage: Apoc. can., Erig. can., Tril. pend.

Side, pain in the right: Actæa racemosa.

Toothache: Acon., Alumina.

Trismus nascentium: *Passiflora incarnata*.

Urethra, painful in micturition, urine sometimes mixed with blood: Equisetum h.

Vomiting during pregnancy: *Æsthusa cynapium*, when milk is not tolerated: Ipec., Kreasot., Nat. sulph., Nux vom., Oxylate of Cerium.

Vomiting, irrepressible: Cup. ars., Calomel, 2d dec., grain doses, three or four times a day, continued for eight or ten days.

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